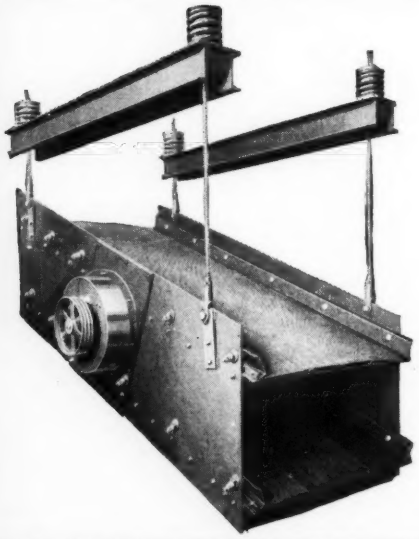
Mining CONGRESS JOURNAL

APRIL 1947

COAL SHOW 1947

SEE Them at CLEVELAND



The New LINK-BELT Concentric-Action Vibrating Screen

To be exhibited for the first time anywhere, at the Coal Show in Cleveland. The new Link-Belt "CA" type vibrating screen has many cost-cutting advantages, such as:

HIGH CAPACITY: Greater amplitude at high speeds; unobstructed screening surface; true circle movement; controlled screen cloth tension.

SMOOTH OPERATION: Less abnormal vibration through critical ranges in starting and stopping; minimum starting torque; cable suspension or floor supported.

LOW MAINTENANCE: Easily serviced and inspected.

Actual Operating Units on Display in Our Exhibit

COAL SHOW - - Cleveland, May 12-15

The Multi-Louvre Heat Dryer

Is your problem that of drying fine sizes of coal after wet cleaning? Or do you want to increase efficiency of air cleaning when fines are air cleaned at mines with prevalent moisture?

The answer to both is the Link-Belt MULTI-LOUVRE unit which permits fast drying without over-heating, handles coal gently, requires much less horsepower, needs less space, has simpler and less expensive fans, and lower installed cost. See it in operation at the Link-Belt exhibit.

In addition to these actual operating units, our exhibit will cover the entire Link-Belt line of coal handling and preparation equipment as well as the famous Link-Belt line of mechanical power transmission machinery and Link-Belt Speeder Corp. line of shovels—cranes—draglines. Motion pictures will be shown of the latter, and of the Link-Belt heavy media coal cleaning process. You are cordially invited to make our exhibit your headquarters. Spaces 1633, 1639, 1645 and 1651, lower Lakeside Hall, Public Auditorium, Cleveland, Ohio.

LINK-BELT COMPANY 10,689

Chicago 9, Philadelphia 40, Pittsburgh 19, Wilkes-Barre, Huntington, W. Va., Denver 2, Kansas City 6, Mo., Cleveland 13, Indianapolis 6, Detroit 4, St. Louis 1, Seattle 4, Toronto 8.

COAL PREPARATION AND HANDLING EQUIPMENT

Engineered, Built and Backed by LINK-BELT

LINK-BELT SPEEDER "SHOVEL-CRANES" *on Stripping Operations Make High Production Records!*

In Western Pennsylvania bituminous area, the K-370 high-lift stripping shovel is working on shale and rock, after the top soil and gravel overburden has been removed by the K-375 dragline, in the background.

K-300 SERIES DRAGLINE AND STRIPPING SHOVEL ARE TYPICAL OF COAL MINING APPLICATIONS

The operation shown above, in the Western Pennsylvania bituminous field, is duplicated in all coal stripping fields, where representative firms are relying on Link-Belt Speeder draglines and stripping shovels for efficient and economical service.

Ample power to cope with the severe conditions met in this work, is readily responsive to the "Speed-o-Matic" full hydraulic controls, which operate clutches and brakes with velvet smoothness, eliminating lost motion and relieving the operator of all physical effort. This feature alone accounts for a large share of the high production records piled up by Link-Belt Speeders, through the total absence of "operator-fatigue."

Top soil, gravel and loose rock are commonly handled by the Link-Belt Speeder dragline, equipped with long boom and dragline bucket. Where shale, sandstone or hard rock is encountered, the high-lift Link-Belt Speeder stripping shovel supplements the dragline as an efficient digging machine, and also for loading the coal into trucks.

VISIT THE LINK-BELT SPEEDER BOOTH, No. 1651

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AT THE COAL SHOW—CLEVELAND—MAY 12 TO 15

Twenty-five models in the Link-Belt Speeder line, include a type and size to meet every requirement. There is a Link-Belt Speeder distributor near you, equipped and trained to give you prompt, efficient service.

10,867

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Builders of the Most Complete Line of

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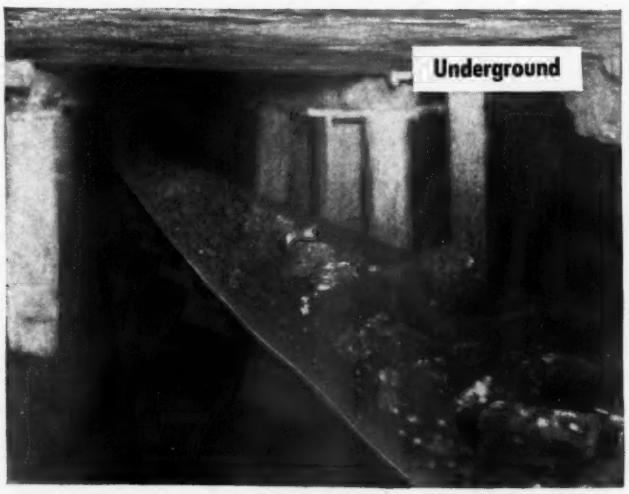
For instance: Where headroom is at a premium, Barber-Greene has the answer in simple channel-frame conveyors that are standard in the B-G line. And this line includes the right accessories to enable you to get the complete conveyor system from a single source.

You, too, should know how your conveying jobs can be handled best by standardized Barber-Greene Belt Conveyors. See your Barber-Greene distributor.

Aboveground


Underground

See our exhibit at the AMERICAN MINING CONGRESS Booth No. 1538

Barber-Greene Belt Carriers can make your belt conveying systems more trouble-free, less costly to operate. All-welded; plain, roller or ball bearings as your job requires.

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Constant Flow Equipment

BUCKET LOADERS • BELT CONVEYORS • PORTABLE BELT AND FLIGHT CONVEYORS • CAR UNLOADERS • SNOW LOADERS • COAL LOADERS

Mining CONGRESS JOURNAL

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FRONT COVER: The Terminal Tower as seen from the Cleveland High Level Bridge.

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Any Capacity

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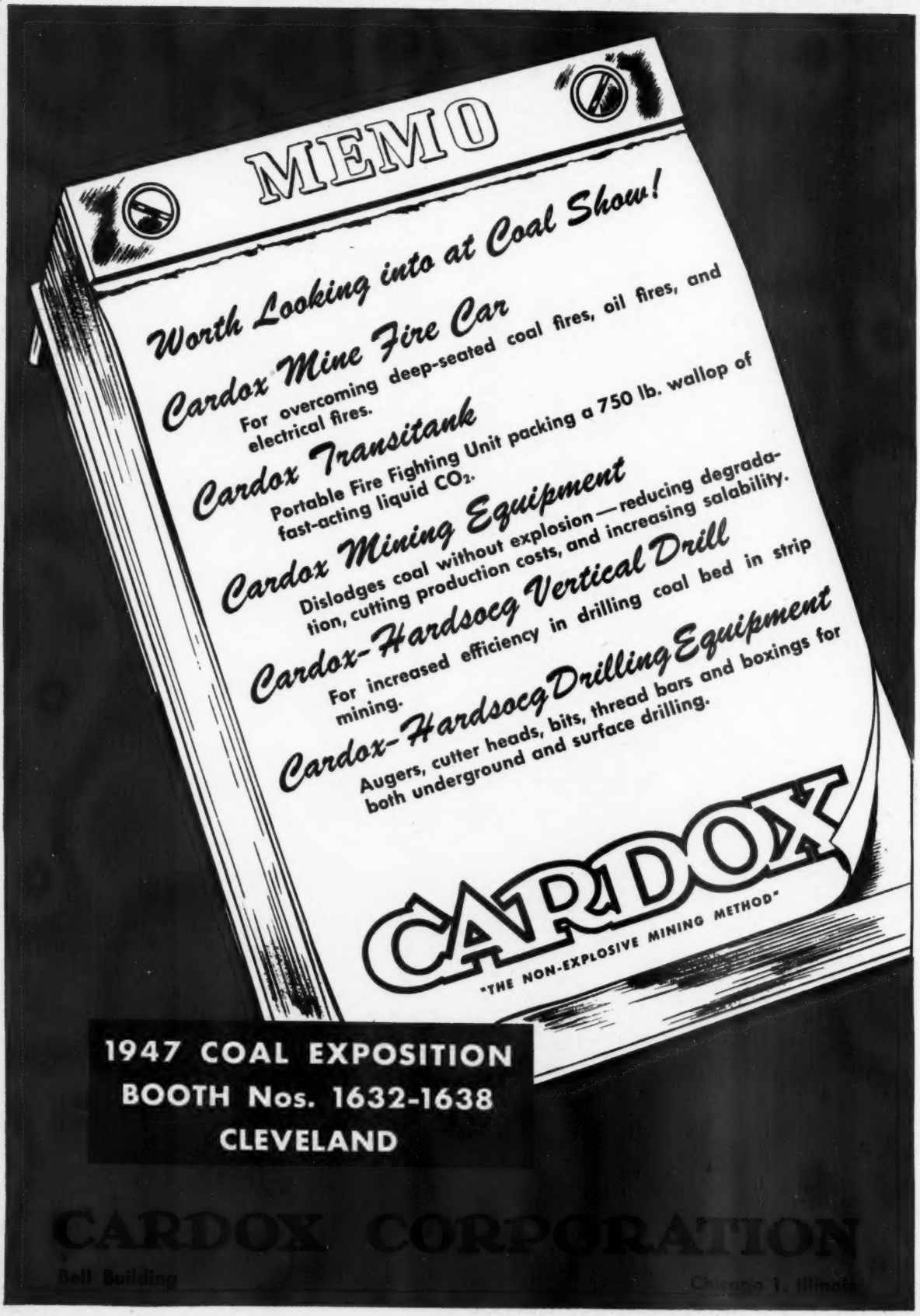
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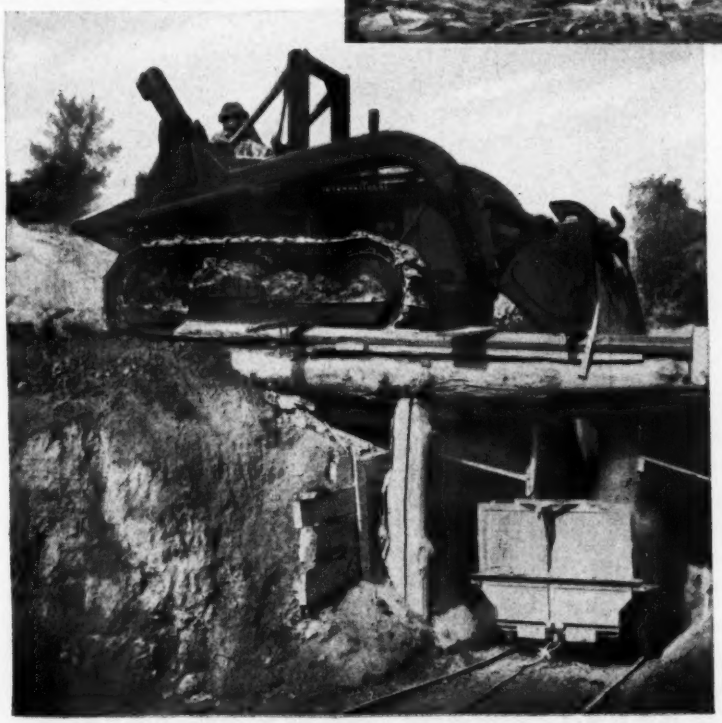
"THIS INTERNATIONAL TD-9 INCREASED OUR OUTPUT LOWERED OUR COSTS"

■ The owners of Minco Products, Inc., Saginaw, Michigan, are enthusiastic in their endorsement of International Crawlers. Their TD-9 Diesel with a dozer shovel replaced hand labor and a small front end loader. This resulted in increased production of dried and pulverized clay at lower cost. The TD-9 removes overburden, takes out trees, stockpiles the clay, loads it in kiln cars as illustrated and loads overburden on trucks.



Tune in James Melton on "Harvest of Stars" every Sunday! N.B.C. Network.

That's What INTERNATIONAL CRAWLERS are Built to Do!

These rugged, powerful Diesels are built to take on the toughest jobs you can give them. They are versatile. They build access roads, remove overburden, dig and carry ore, feed sluice boxes, and do any number of other jobs equally well.

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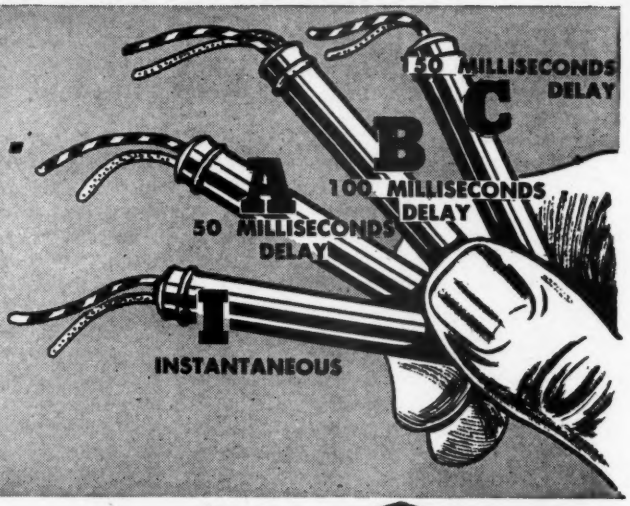

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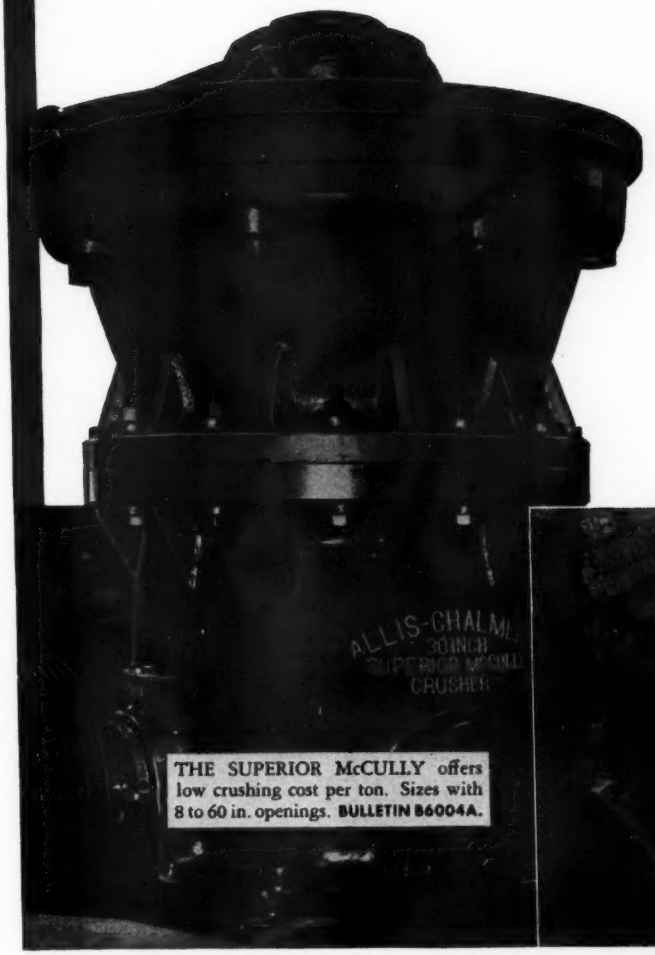

THE SUPERIOR McCULLY offers low crushing cost per ton. Sizes with 8 to 60 in. openings. **BULLETIN B6004A.**

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Allis-Chalmers is the world's largest manufacturer of rock and ore reduction machinery... builds jaw, gyratory, roll crushers and pulverators for *any* crushing application. Gyratory types include the Superior McCully and the fine-reduction Type "R" Crusher. **Send for BULLETIN B6166D.**

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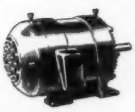

A complete line of electric motors—from one hp to your largest requirement—is built by Allis-Chalmers in induction, synchronous, and direct current types. Lo-Maintenance durability features built into Allis-Chalmers motors result in maximum motor life. **Send for BULLETIN B6052G.**

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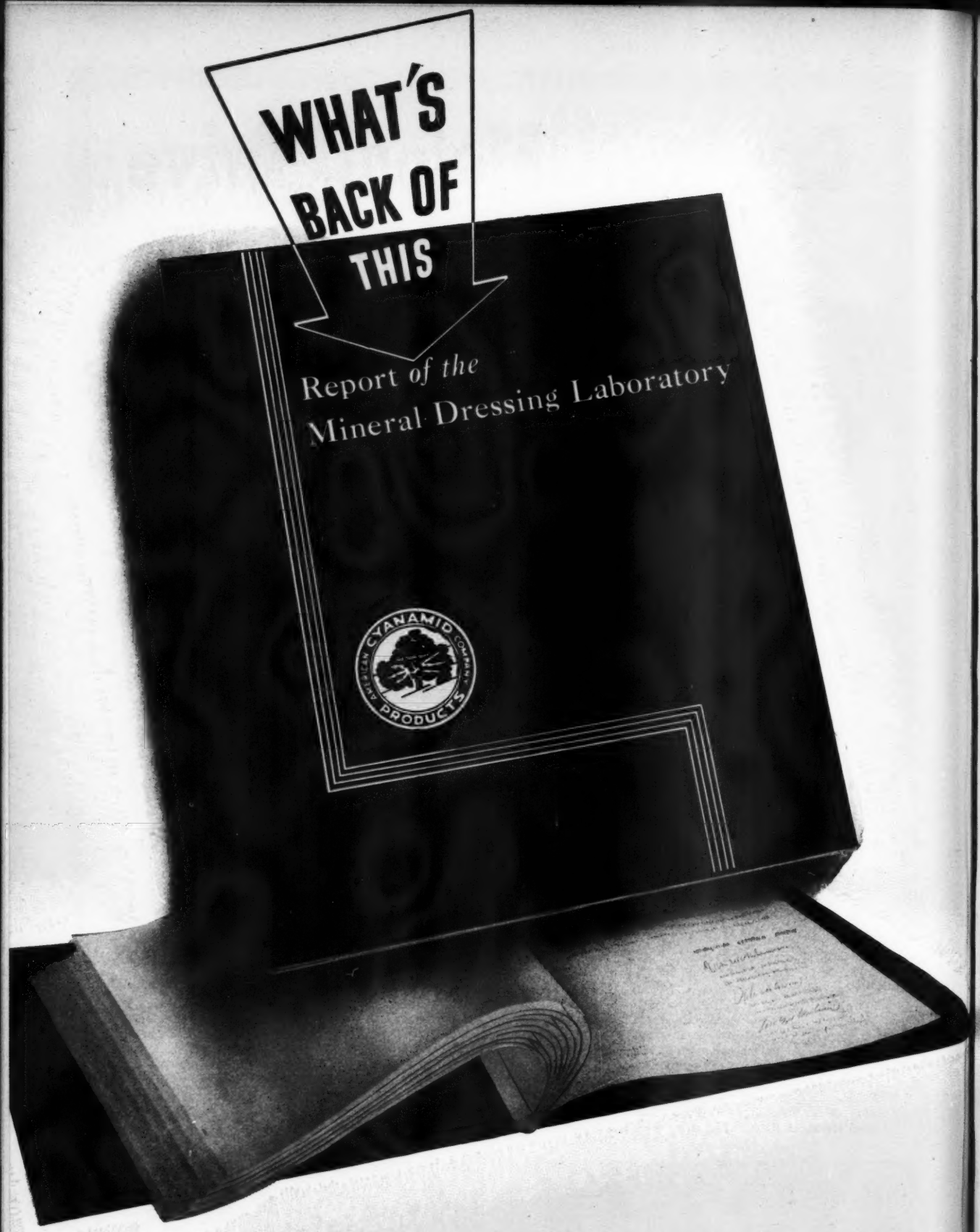


AMERICAN CYANAMID COMPANY

What's back of a Cyanamid Mineral Dressing Laboratory Report?

Simple unequivocal answer: An unduplicated reservoir of technical talent and facilities which could not be economically justified on any one mining property.

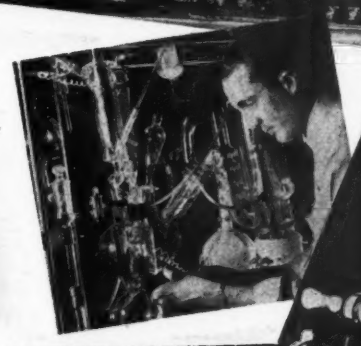
Specifically, a Cyanamid Mineral Dressing Laboratory Report represents the composite investigations of scores of metallurgists, microscopists, chemists, physicists and testing engineers . . . who in turn can draw upon the work of nearly a thousand scientists in other Cyanamid research activities.

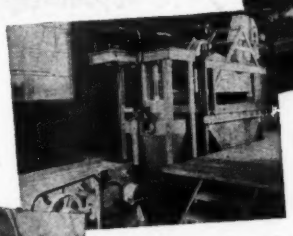
Though each Cyanamid Mineral Dressing Laboratory Report relates to a specific beneficiation problem, typically it is a correlation of many diverse tests to determine the most economic treatment method and reagent combination. As the need indicates, the Report combines the result of microscopal examination; physical and chemical analyses; gravity, flotation, cyanidation and Heavy-Media Separation testing with a liberal admixture of judgment and experience in translating test results into a workable flow scheme.

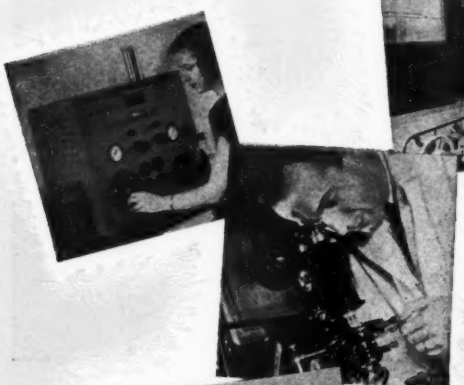
Cornerstone of two decades of ore-sample-to-concentrates service, a Cyanamid Mineral Dressing Laboratory Report is just as much "A Cyanamid Product" as a drum of Aerofloat* Reagent or in-the-mill-assistance of a Cyanamid Field Engineer.

We invite correspondence on how our personnel and facilities can help you to increase yield, reduce cost, or both.

**Aerofloat is a registered trademark of American Cyanamid Company applied to flotation reagents of its manufacture.*







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BOOTH 529
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May 12-15, 1947

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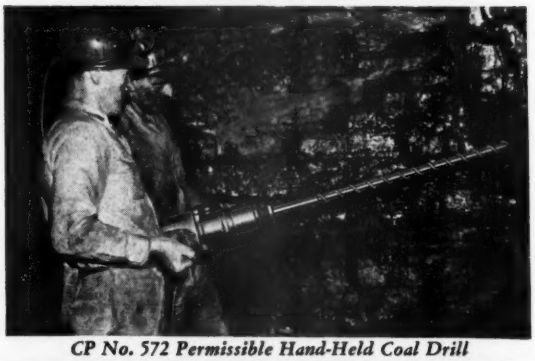

CP No. 572 Permissible Hand-Held Coal Drill

NOTABLE FOR SPEED AND SAFETY

CP Permissible Electric Coal Drills

Here's the world's fastest electric coal drill, the CP No. 571 Permissible Hand-Held Drill, known as the "Whippet." Weighs but 43 pounds. Easily operated by one man in the softer seams. Adjustable safety clutch, auger chuck, motor and gears are completely enclosed in stream-lined housings.

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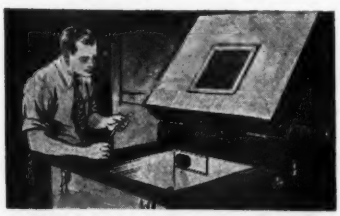

DEEP FREEZE TEST—Scientists—using specially designed equipment—subject U. S. Mining Machine and Locomotive Cables to a cold rarely encountered by man . . . minus 45 degrees F. This is one of the several ways of testing the dependability of U. S. Royal Cords and Cables.

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That's the freeze test U. S. Royal Cords and Cables with Neoprene jackets must pass . . . before U. S. Rubber Company scientists pronounce them cold-resistant.

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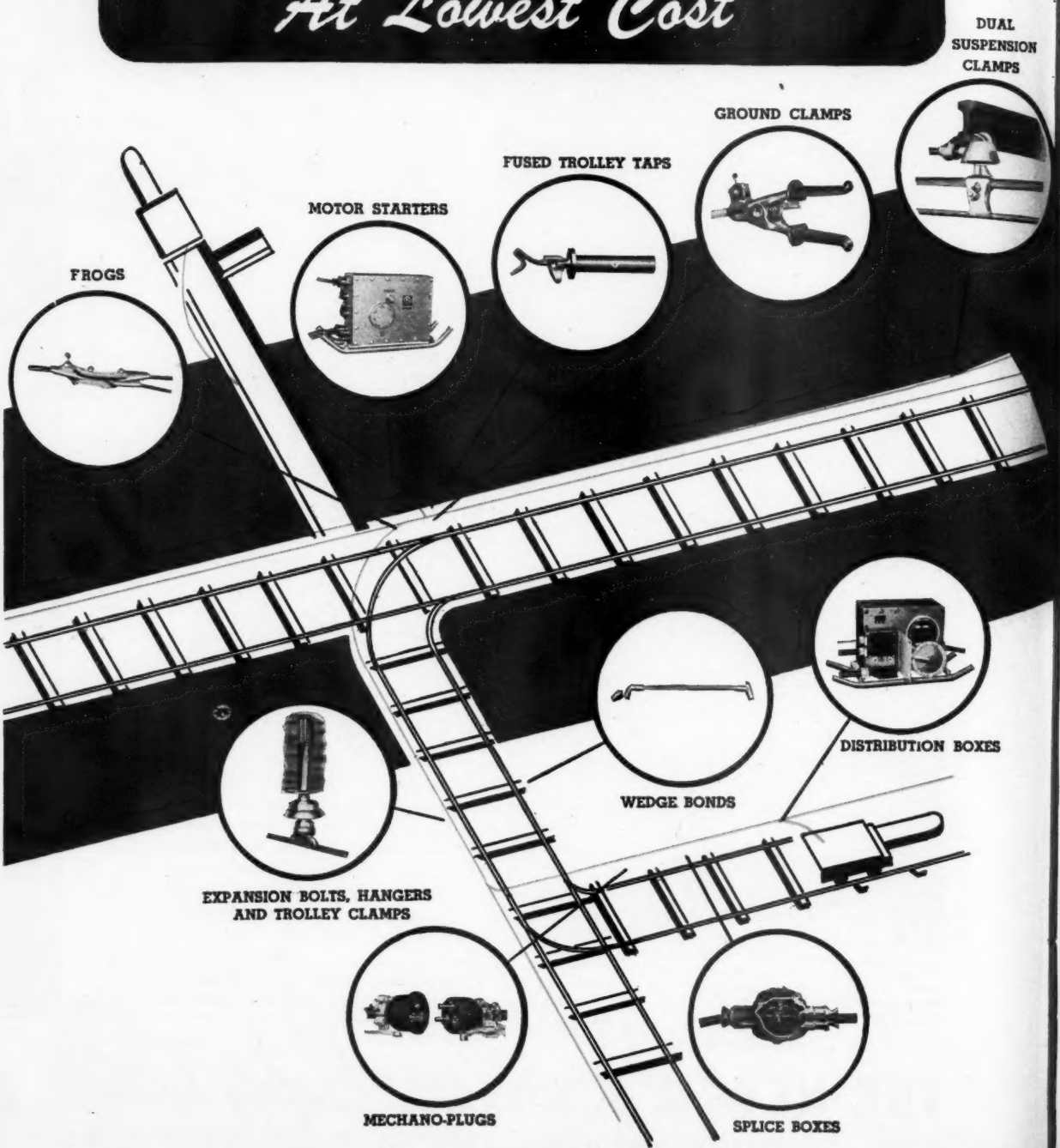
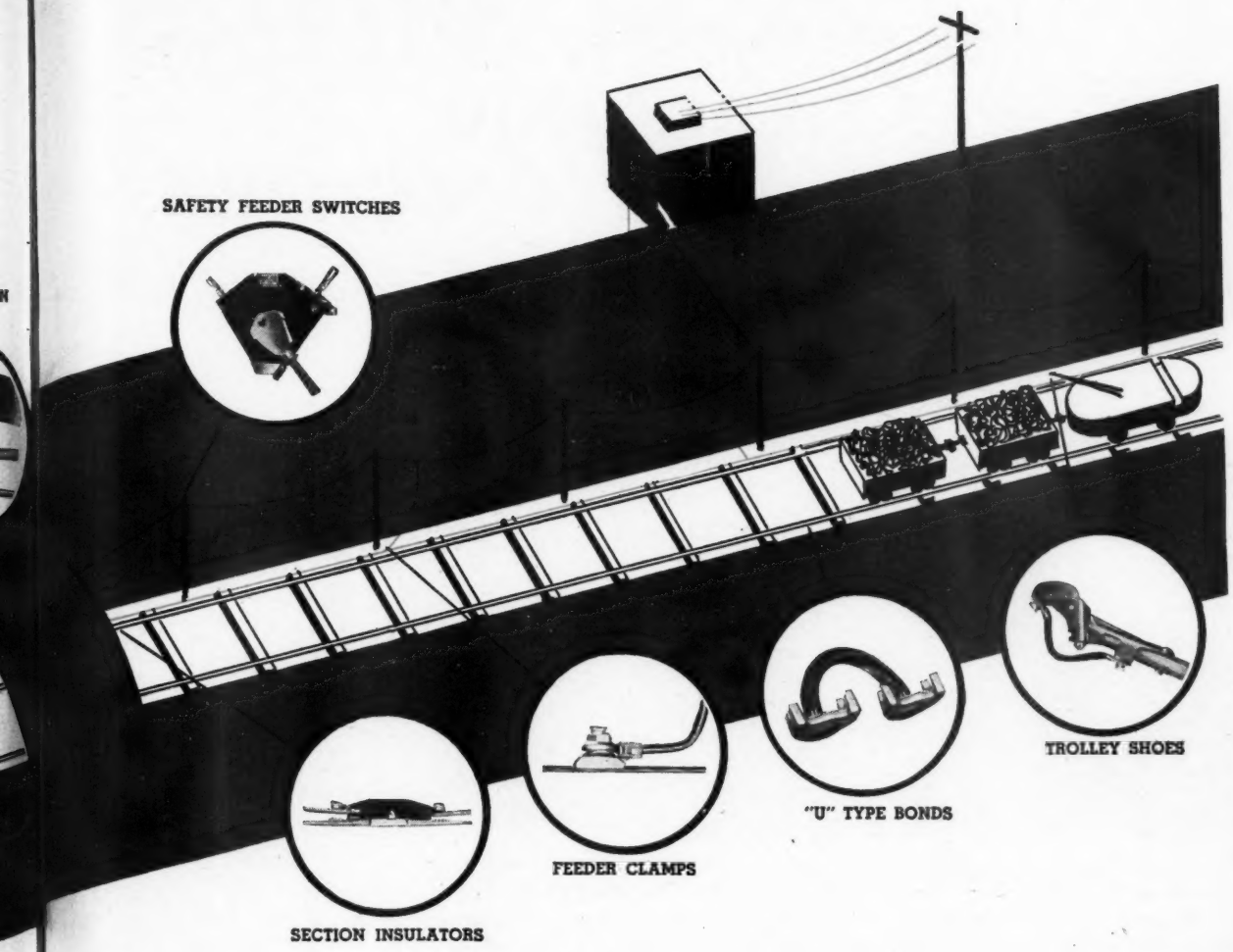
Visit the U. S. Rubber Company exhibit at the Convention of the American Mining Congress in Cleveland, May 12-15. Booth No. 1550.

THE NEW U. S. ROYAL *Safety Tested*

MINING MACHINE AND LOCOMOTIVE CABLES

PUT *Controlled Power*
WHERE YOU NEED IT
WHEN YOU NEED IT
At Lowest Cost





WHETHER your power distribution system embraces but a few miles of trolley and feeder or a complex arrangement of interlocked control for mechanical equipment, you can be certain of reliable, low-cost service by installing O-B power handling materials from substation to face. Designed to work together, O-B materials combine to produce a system that really *works*--a system not subject to power outages from product failures--a system that assures an adequate flow of controlled power when and where you need it. O-B's complete "substation-to-face" line of power distribution materials includes a wide variety of devices, each carefully designed and expertly manufactured for years of trouble-free service. Many of the individual products are shown here. For a more complete selection, consult your No. 22 catalog.

Ohio Brass

MANSFIELD, OHIO

CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

2787-M

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in the making of

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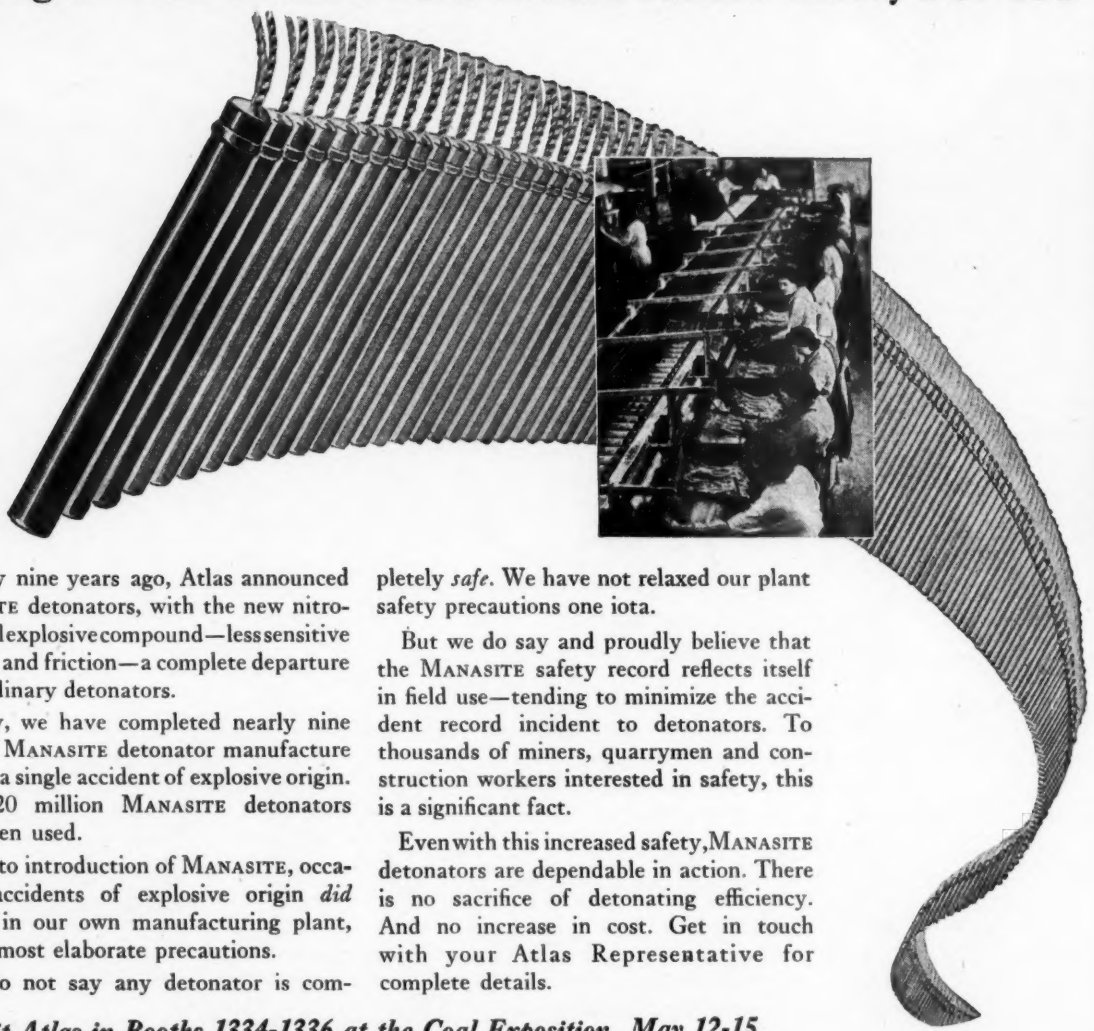

Nearly nine years ago, Atlas announced MANASITE detonators, with the new nitromannitol explosive compound—less sensitive to shock and friction—a complete departure from ordinary detonators.

Today, we have completed nearly nine years of MANASITE detonator manufacture without a single accident of explosive origin. Over 520 million MANASITE detonators have been used.

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We do not say any detonator is completely *safe*. We have not relaxed our plant safety precautions one iota.

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Even with this increased safety, MANASITE detonators are dependable in action. There is no sacrifice of detonating efficiency. And no increase in cost. Get in touch with your Atlas Representative for complete details.

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Manasite—Reg. U. S. Pat. Off.

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IN 1841, two years before the first telegraph line was installed in this country, and when there were but 27 states in the Union, John August Roebling was inspired with the idea of making a new kind of rope of unheard of strength and flexibility. His confidence in his idea caused him to risk everything he had on the development of his new rope.

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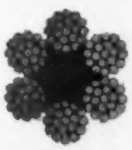
Branches and Warehouses in Principal Cities

FOR EXAMPLE—"BLUE CENTER" STEEL WIRE ROPE



Roebling entrusts your confidence in Roebling and Roebling products to the performance of its "Blue Center" Steel Wire Rope. It is the best rope Roebling knows how to make. It is available as preformed or non-preformed, in a complete range of sizes and constructions to meet a great variety of operating conditions. Its uses are almost unlimited and its performance is consistently economical.

DROP IN AT THE ROEBLING EXHIBIT AT THE COAL MINING SHOW IN CLEVELAND

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ROEBLING

A CENTURY OF CONFIDENCE

Holes Drilled 10 Times Faster!

It took 73 minutes to drill 5 blast holes in coal with steel bits. Kennametal Bits, in same hand-held drill, do the job in 7½ minutes!

Easier Work for Skilled Men!

Holes are drilled with less manual effort because Kennametal Bits hold their keen edge—drill to desired depth without pulling out for bit changes.

Power Consumption Cut 90%!

Drilling holes 10 times faster saves 90% of the power formerly used . . . and proportionately reduces wear and tear on the drilling machine.

KENTUCKY MINE IMPROVES COAL PRODUCTION 5 WAYS

Tonnage Per Shot Increased 50%!

Blast holes are now drilled 7½ feet deep with Kennametal Bits, instead of 5 feet, which was the practical limit of steel bits. 50% deeper holes . . . approximately 50% more coal per shot.

Production Balanced!

Capacity use of all underground equipment is more nearly approached, as delays due to slow drilling are avoided.

By using this revolutionary **KENNAMETAL** *Drill Bit*

The service results summarized above, as recorded in a Johnson County, Kentucky mine, are being obtained in scores of other mines. Here's why—Kennametal Bits drill with greater ease, at faster speed, because their cutting edges are Kennametal*, the tool metal that is far harder and more durable than the hardest steel. There's only one way to prove what they can do for you—try them now. Our mining engineer in your district will be glad to demonstrate. Write us, giving details of your operation.

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Cleveland—May 12-15, 1947

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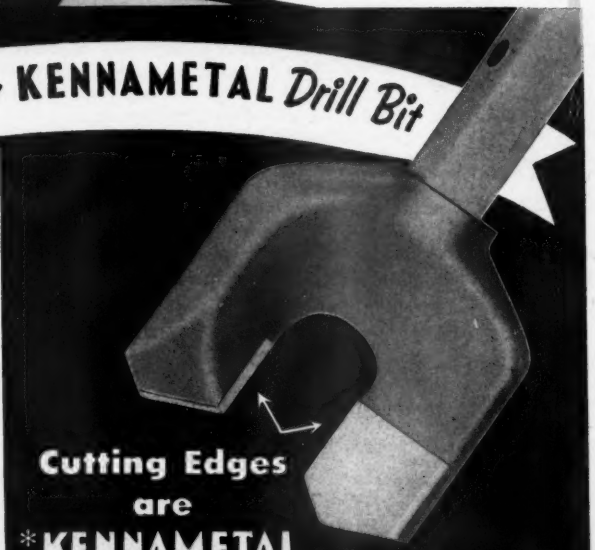
SUPERIOR CEMENTED CARBIDES

KENNAMETAL *Inc.*, LATROBE, PA.



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* the tough, exceptionally hard, amazingly durable metal that is used all over the world to reduce the cost of cutting steel, cast iron, nonferrous metals, rock, cement, tile, and many other materials

You'll want to see the 40-ton Bottom-Dump Euclid Coal Hauler and Rear-Dump models for overburden and gob hauling on display at the Coal Show. And while you are in Cleveland we hope that you'll give us an opportunity to show you the modern new factory where Euclid equipment is built. Just drop in at our exhibit and we'll arrange a plant trip at your convenience.

We are looking forward to seeing you in Cleveland and hope you'll put Euclid Headquarters on your "must" list for the Coal Exposition.

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for BETTER PERFORMANCE... LONGER LIFE

Operates Cooler under Extreme Overloads

NEW HEAT-CONDUCTING inner-belt dissipates heat, providing cooler operation at extreme overloads.

FLAME-RESISTANT, extra-tough outer jacket gives valuable protection.

TOUGHNESS-PLUS—seine twine reinforcing resists tearing. Engineered construction eliminates kinking.

Inner-belt and filler combined, of a special new heat-conducting Neoprene compound, greatly increases operating safety factor. Engineered construction eliminates kinking... tough flame and abrasion-resistant Neoprene outer jacket further assures long, continuous service. Here is a simpler, sounder, *safer* Securityflex cable for greater economy of operation.

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ANACONDA *Securityflex* **CABLE**

ANACONDA

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Here are some of the other reasons why the CF89H is first choice in so many mines:

- *Large bearing area of valve on plug minimizes wear —assures precision of action over long period of operation.*
- *Line oiler provides effective automatic lubrication both to feed motor and drill.*
- *Four-pawl rifle bar rotation with reversible pawls for double wear.*
- *Drill throttle and feed throttle are side by side on rear face of backhead—no stretching from one to the other when easing drill through fitchery ground.*

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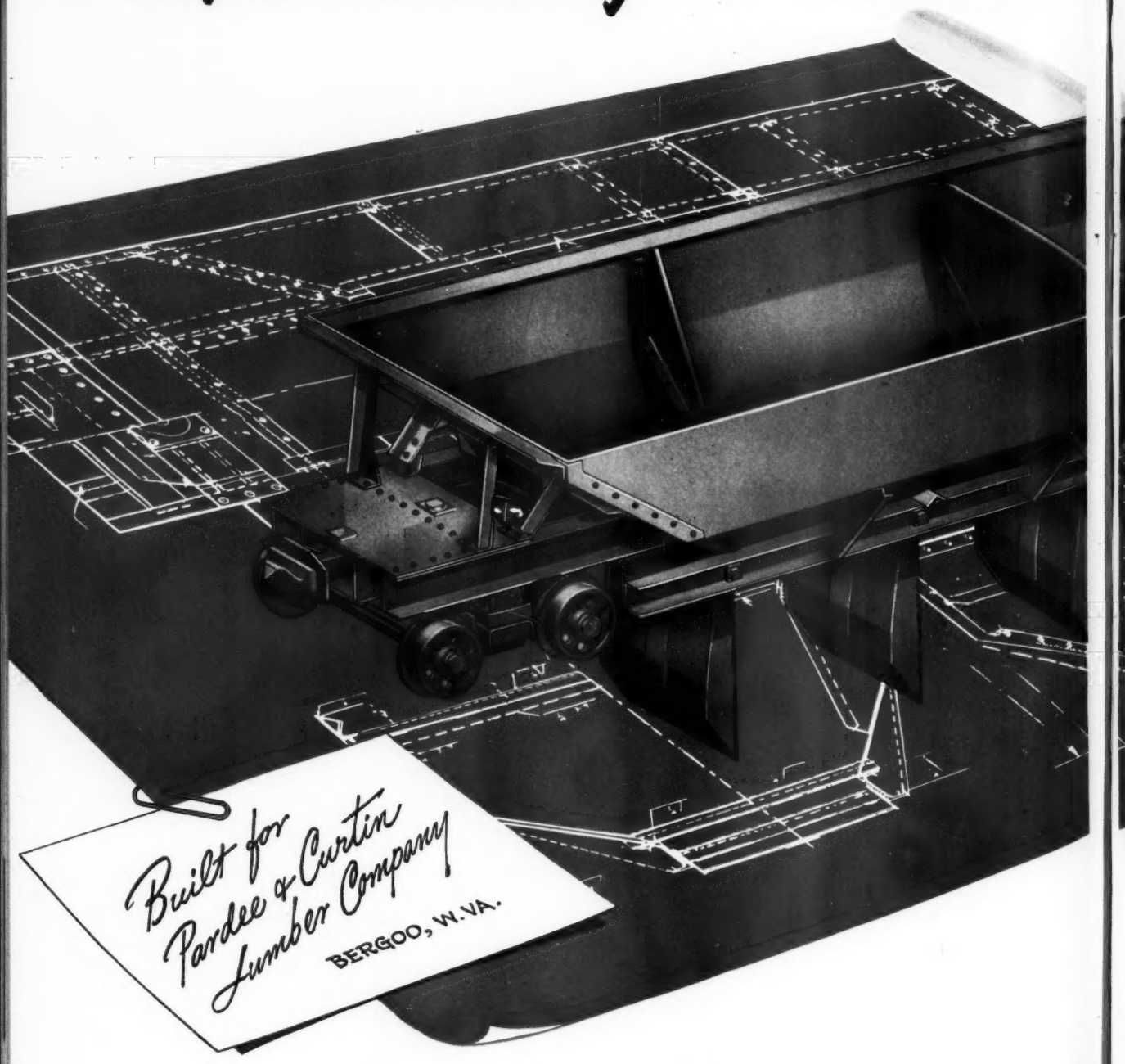

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It's NEW!...It's REAL!

Here's the car that is ideally suited to mechanical mining! High Speed haulage coupled with rapid unloading allows more car trips per shift—resulting in higher production and lower costs per ton of coal mined. Fewer cars are required to handle a specified tonnage—because of the saving in dumping time!

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THE BABY THAT GREW TO BE A GIANT

Years ago, when we first began developing prefabricated track, we naturally encountered a certain amount of the eyebrow-lifting that greets every new idea—an understandable "show me" attitude.

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★ Each Bethlehem prefabricated-track layout is designed individually, for an individual mine.

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The idea that started life as a baby is now a full-fledged giant—and still growing. If you are considering expansion or revision of your haulage system, prefabricated track can probably point the way to important savings. Why not ask a Bethlehem man to study your workings?

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Bethlehem Prefabricated Track

BETHLEHEM STEEL

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SINCE 1918...PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS

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Low weight per horsepower . . . smooth operation over a wide range of engine speeds . . . simple design for easy servicing . . . these are reasons for the dependable, low cost performance that makes Cummins Dependable Diesels the most efficient power source in the 84 to 275 hp range.

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—takes less manpower to set up these lightweight aluminum supports —and they'll take hard service. They can be moved fast and are easy to handle. Used as roof supports at working faces, Alcoa Aluminum Structural Shapes give longer service on the job . . . stand up well in storage. Highly resistant to corrosion, these aluminum beams are mineworthy and are not inflammable.

For working face roof supports in mines, tunnels, and excavations, Alcoa Structural Shapes provide a high safety factor, are economical as well. Alcoa engineers will help you choose shapes to suit your strength requirements. ALUMINUM COMPANY OF AMERICA, 1765 Gulf Bldg., Pittsburgh 19, Pa. Offices in leading cities.

ALCOA ALUMINUM STRUCTURAL SHAPES

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IN EVERY COMMERCIAL FORM

For LOW COAL and HIGH COAL

there's faster loading and better clean-up with

The CLARKSON

TYPE 24 BB
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Whether headroom is 36 feet or 36 inches, it makes no difference with the Clarkson 24BB Universal Loader on the job. Highly flexible—with vertical or horizontal adjustment. The digging head gets those tight shots—it's the *lowest* loading machine on wheels.

The efficient Clarkson Redbird does the job faster, better and at low cost. Operated from one central point.

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BITUMINOUS COAL
Mining Towns
NORTH SOUTH EAST WEST
PICTORIAL STORY OF THEIR PROGRESS
These scenes, typical of the best, show what can be done and what has been done in the betterment of the living conditions of the men who mine the nation's No. 1 fuel. Not all mining communities are as modern and fine as those shown in this book, but the pictures do illustrate how
Mountain, Virginia

Pictures of Progress

IN THE WAY MINERS LIVE

● Read by journalists, teachers, and other people concerned with public information . . . prepared by the Bituminous Coal Institute . . . here's a book that vividly and factually tells the story of America's mining towns.

To Pin Down Facts

Photographs provide informal close-ups of the people, places, facilities, and events in typical modern mining towns. Descriptive text points out that the standard of living of an average miner and his family, while not luxurious, is far from poor . . . that in general, it compares very favorably with national averages.

This brochure is part of the broad public relations program which the Bituminous Coal Institute conducts in your behalf. Copies of the booklet have been put in the hands of editors, publishers, columnists, radio commentators, and libraries throughout the country. It has been offered to teachers and educators through B.C.I. advertising in professional publications. The material in the book has been made available to the press.

You Can Help

If you wish to put copies of this valuable pictorial report into the hands of your friends and key people in your community, who otherwise might not see it, you may obtain copies for your own distribution at a rate of $20 per hundred. Write to the Bituminous Coal Institute, 815 Southern Building, Washington 5, D. C.

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Washington, D. C.

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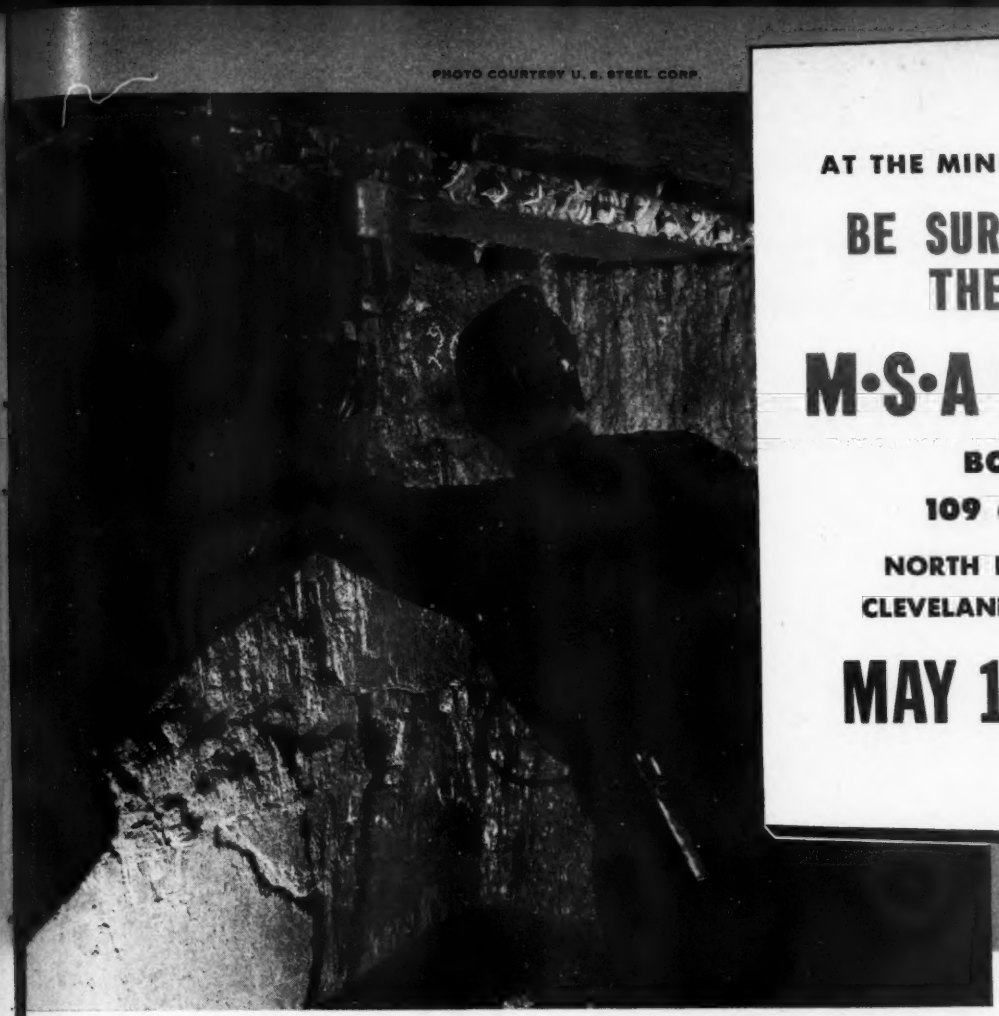
Bituminous Coal . . . lights the way . . . fuels the fires . . . powers the progress of America



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AT THE MINING CONGRESS

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M·S·A DISPLAY

BOOTHS

109 and 208

NORTH EXHIBIT HALL

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MAY 12 to 15 inc.

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The many fine products bearing the M.S.A. Trademark result from intensive laboratory research, superior design engineering, and controlled quality in manufacture —providing a constant assurance to the mining industry of maximum dependability and value.

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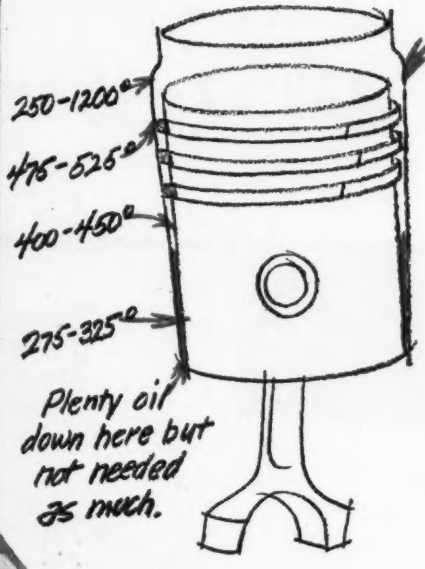
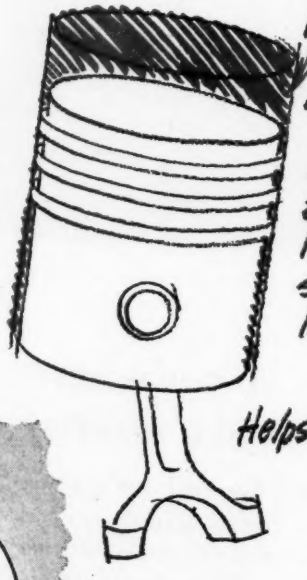
LUBE MEMO

Idea for preventing tapered cylinders!



Liners wear tapered like this— Most wear at top because ordinary lube oil scoots off hot metal, Leaves top of barrels bare.

Plenty oil down here but not needed as much.



RPM DELO DIESEL ENGINE LUBRICATING OIL stops this kind of wear. Contains adhering agent which hugs hot metal surfaces most oils leave bare.

Helps prevent blowby.

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Hauling is one of the tough jobs in coal mining. It calls for a tough truck. It calls for a Mack—America's leading heavy-duty truck for 47 years.

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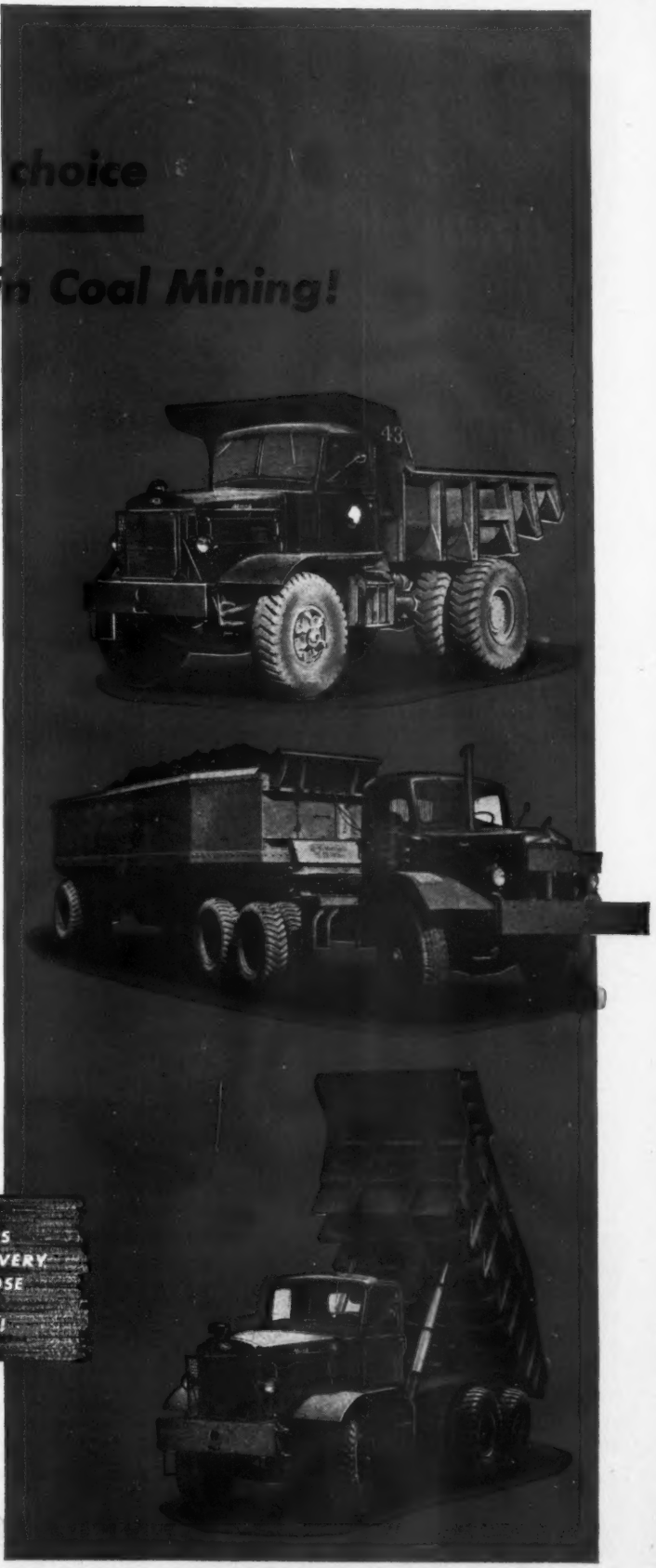
There's a Mack to make your hard work easier, to make your profits bigger.

SEE THE NEW MODELS ON DISPLAY AT THE MACK EXHIBIT—American Mining Congress Coal Convention, Cleveland, Ohio, May 12-15.



Mack Trucks, Inc., Empire State Building, New York 1, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, New York. Factory branches and dealers in all principal cities for service and parts. In Canada, Mack Trucks of Canada, Ltd.

a new, improved,

PORTABLE CABLE

jacketed with GEOPRENE*

GE Announces

Shielded, three-conductor, Type SH-D, 5,000 volts, recommended for electric shovels and other portable electric machinery.

BETTER THAN "TELLURIUM"

- TOUGHER IN THE TEAR TEST
- HIGHER IN SUNLIGHT RESISTANCE
- FLAME RESISTANT!

Most important factor in portable-cable life is the use-and-abuse resistance of the cable jacket. Today, G.E. is able to offer a portable cable guarded by a new, super-tough Geoprene jacket. This new jacket is tougher and longer aging then Tellurium, our famous prewar rubber jacket, and meets or exceeds in every particular exacting ASTM requirements.

In tear resistance the jacket is 175 per cent better than called for by ASTM requirements, and 150 per cent better than Tellurium. In the oxidation test (which measures aging properties) typical values exceed ASTM standards by 105 per cent. Geoprene carries Approval No. P-108 by the Pennsylvania Dept. of Mines for flame resistance.

G-E portable cable stands up under rough-and-tough operating conditions. Strands and jackets are extra flexible to withstand constant flexing. Geoprene retains its mechanical strength longer than rubber, even when subjected to moisture, continued movement, and especially to intense sunlight.

There is a right type and size of G-E portable cable for every mobile power-transmission job. Each is designed to help you get long life and top-notch performance from a wide range of electrical equipment. Your local G-E representative will gladly supply recommendations for your particular requirements. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

*GEOPRENE: *A special synthetic compound by General Electric containing approximately 60 per cent neoprene.*

GE INSULATED CABLE *Always the right cable for your job*

Another G-E achievement resulting from "full-range" research

For many years, G-E tellurium portable cable was widely known to be tough and long-lived. Over ten years ago G-E research specialists were experimenting with laboratory quantities of new synthetic compounds, and had discovered that neoprene had great possibilities as a cable jacket. When the best formulation was finally developed, containing 60 per cent neoprene and the balance plasticizers, vulcanizing and reinforcing agents, G-E production engineers solved the many problems encountered in its full-scale production. The end product is in every respect superior to tellurium-jacketed cable, and it is doubtful that we shall ever revert to the natural rubber product. As moisture-resistant and tougher than tellurium, Geoprene is also highly resistant to most solvents that attack natural rubber.

GENERAL ELECTRIC

502-56-1200

Mining CONGRESS JOURNAL

Published for the Entire Mining Industry by The American Mining Congress

JULIAN W. FEISS, Editor

Volume 33 APRIL, 1947 Number 4

FULL SPEED AHEAD FOR COAL

DURING the war our coal mine operators concentrated upon production to meet the immediate emergency. The demand was for tonnage—more tonnage from the mines. The wheels could not stop; coal had to be available. Manufacturers of mining machinery were obliged to defer research in new equipment until the ending of hostilities—there was neither time nor personnel available for the exacting procedures of future planning.

Fortunately this period is history. The 1947 Coal Convention and Exposition will, in all probability, usher in a new era for coal. The Cleveland program, which appears elsewhere in this issue, will inform the reader that coal is prepared to serve American industry with the same zest and efficiency that has characterized its performance during the trying period of war and transition.

A "STACKED DECK" IN POTASH MINING

ON JANUARY 4, 1945 the General Land Office published a circular governing the issuance of potash permits and leases on public lands. Had the Department of the Interior planned to discourage potash exploration and mine development, no better means could have been devised. On March 24 of this year certain amendments to these regulations were issued. If potash producers had anticipated a marked improvement in their position from these revisions, they were doomed to disappointment.

In the 1945 code, a maximum acreage limitation was specified for the individual or corporation engaged in potash leasing on public lands. The acreage was entirely inadequate for exploration purposes and although it has been increased somewhat in the new leasing regulations, the additional acreage is still far from sufficient.

A second and far more vicious feature of the 1945 code still stands. This provision requires that lessees sell to the Department of the Interior a percentage of their potash output when given a year's advance notice, the price to be determined by the Secretary of the Interior.

The original Potash Act of February 7, 1927 was passed "to promote the mining of potash on the public domain." There was no statutory provision granting the Secretary of the Interior the right to purchase a portion of a potash producer's output at any price. Under the Act, the Secretary can issue regulations as to the manner in which the leased land shall be operated but he was not given power to dispose of the mineral output other than that of a small royalty set by Congress.

How can a lessee engaged in potash mining meet his future customer commitments knowing today that, at any time, the Government can secure a percentage of his production? Furthermore, if the Department of the Interior can, at its own discretion, demand and set a price for a portion of a company's potash output, what is to prevent the taking of the entire production at some future date by the mere changing of the percentage figure? Irrespective of the quantity involved under present regulations, is this not confiscation? Finally, and most important, where does the Department of the Interior derive these powers? Since when under our Constitution has any Government agency been granted the preemptive right of confiscation? Were this precedent established and applied by other Federal Agencies free enterprise in the United States would be doomed.

Today the nation is self-sufficient in potash; prior to World War I we were obliged to import almost our entire requirements from abroad, the major portion from Germany. Our present favorable position dates from 1925 when the Snowden and McSweeney Company, while drilling for oil, encountered sylvite beds near Carlsbad, New Mexico. The U. S. Geological Survey and the Bureau of Mines, functioning under legislation sponsored by the American Mining Congress, performed a fine service in the further exploration of the potash field. However, private enterprise was responsible for the discovery, for the development, and for the establishment of a new industry in the Southwest. Apparently the reward for courage and initiative in the potash industry is to be stagnation, possible confiscation of profits, and the eventual termination of mining by several companies responsible for our favorable potash position during the critical period of World War II.

Since it is the announced policy of our Government agencies to encourage private enterprise, and not to involve the Federal Government in business already being satisfactorily performed by its citizens, the position taken by the Department of the Interior in respect to potash leasing is hard to comprehend. The light of day seldom penetrates the long corridors of the Department of the Interior. The endless halls are haunted by shadows—ghosts of a New Deal past.

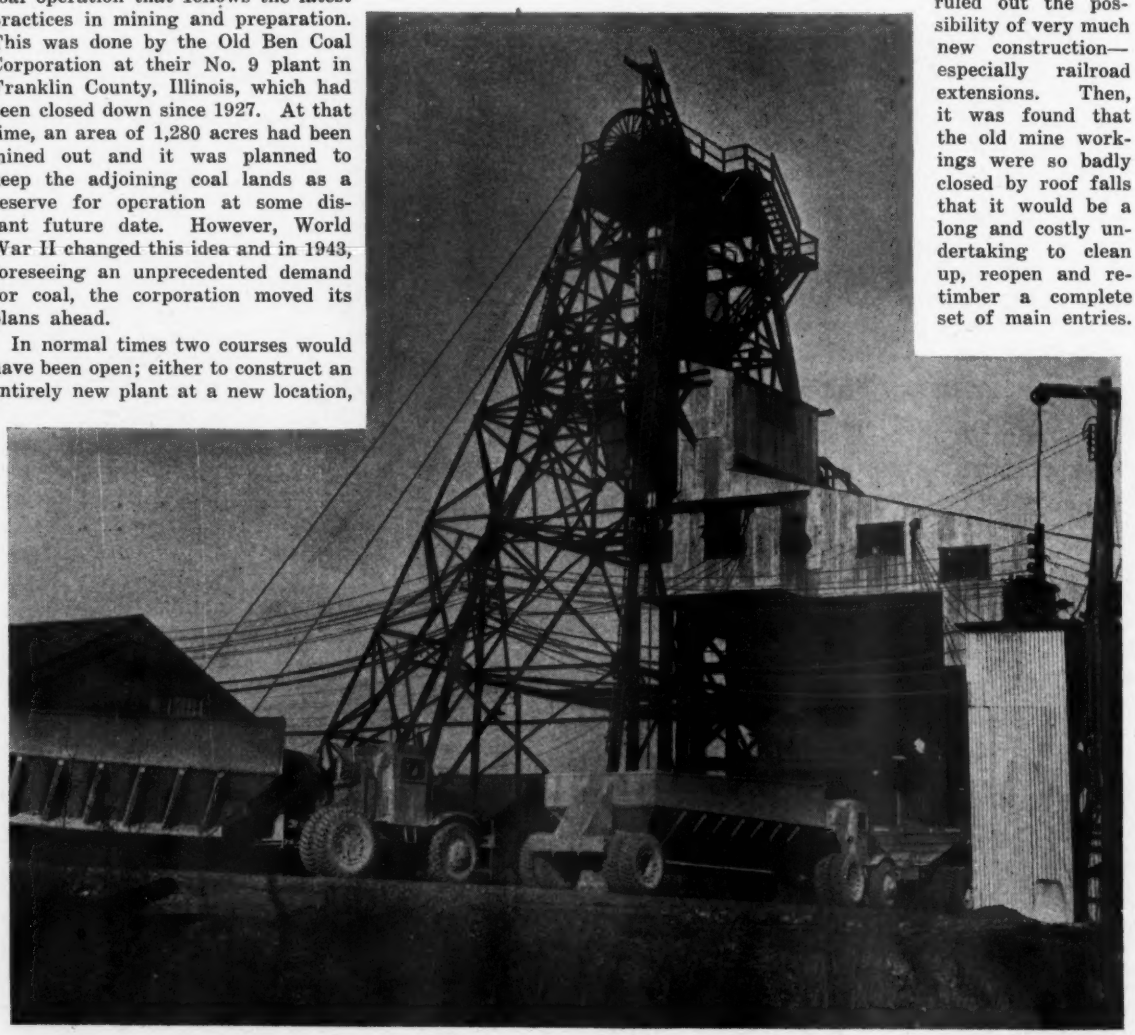
Reopening An Abandoned Coal Operation

By G. B. SOUTHWARD
Mining Engineer
American Mining Congress

Modern Methods and Equipment Have Brought Back into Production a Coal Property That Was Mined and Closed Down 20 Years Ago

THE new and the old—new equipment underground and a surface plant built in the early 1900's—were recently combined to make a modern coal operation that follows the latest practices in mining and preparation. This was done by the Old Ben Coal Corporation at their No. 9 plant in Franklin County, Illinois, which had been closed down since 1927. At that time, an area of 1,280 acres had been mined out and it was planned to keep the adjoining coal lands as a reserve for operation at some distant future date. However, World War II changed this idea and in 1943, foreseeing an unprecedented demand for coal, the corporation moved its plans ahead.

In normal times two courses would have been open; either to construct an entirely new plant at a new location, or else to retain the original plant site on the railroad, open the mine through No. 9 shaft and go through the old workings into new territory. However, some complications were encountered which prevented either course from being followed. First, war shortages of critical materials ruled out the possibility of very much new construction—especially railroad extensions. Then, it was found that the old mine workings were so badly closed by roof falls that it would be a long and costly undertaking to clean up, reopen and retimber a complete set of main entries.



From the new shaft, 30-ton trucks haul to the cleaning plant

Construction and Rehabilitation

This being the situation, plans were adopted to meet conditions as they were. The original tipple, by enlarging the structure and adding cleaning equipment, was changed into a mechanical preparation plant and the surface buildings were remodeled for shops and other plant uses. Then, a new shaft was sunk at the edge of the unmined territory, about one mile distant from No. 9 shaft, and a surface roadway was constructed for hauling the coal by trucks from there to the remodelled preparation plant. An underground connection between the two shafts to serve as an air-way and a supply haulage-way was made by cleaning up and opening only one of the old main entries.

The foregoing construction took care of the general arrangements, but there were still some major decisions to be made regarding the types of equipment to be used underground, particularly for transportation. As the depth of coal is almost 500 ft. below the surface, there was no possibility of a conveyor slope and some type of shaft hoisting was indicated. A skip was chosen for the reason that it requires a shaft of smaller cross-section than when mine cars are hoisted; in other words, a mine car is long and wide, but a skip is narrow and deep.

Then, going underground, mine cars with locomotives were adopted for the main line haulage, but for the working faces, mobile tractor loaders with shuttle cars were selected as an efficient loading and gathering combination and for the added advantages of eliminating some track work. Each of these transportation units—shuttles, mine cars and skips—has the same capacity of 7 tons, which gives a balanced system of transferring the coal from one haulage step to another without delays for part loads.

There were, of course, many other points to be settled, but following the acceptance of these general plans, the construction was started in late 1943. In November, 1945, the first coal was hoisted from the new shaft and before the end of the summer of 1946, the mine had reached its projected production of 4,000 tons per day. This tonnage is now maintained as an average with eight mechanical loading units, working on single shift and as described in the following paragraphs.

Mining Completely Mechanized

The No. 6 seam is from 8 to 9 ft. high, but about 1 ft. of top coal is left as a roof support. Mining is by the conventional room and pillar system, with panels approximately 600 ft. square, developed by a pair of entries in the center with 14 rooms driven off each side, 250 ft. long, 30 ft. wide on 45-ft. centers. These are at present mined abreast, but it is the intention to work the panel retreating, starting at the top and completing the top rooms first. Break throughs in the room pillars are driven at frequent intervals and, after a panel has been completed, additional cross cuts are driven, and in some instances the pillars are slabbed. This increases the coal recovery but the pillar robbing is not carried to the point where complete caving or subsidence of the overburden occurs. The record of a number of years indicates a recovery of nearly 60 per cent of the area mined, excluding the coal left as roof support, and it is hoped to increase the rate of extraction in the future workings.

The mining is completely mechanized with all panel equipment either tractor or rubber-tire mounted and operated by cable reels. Two types of cutters are used, the Goodman slabbing machine caterpillar mounted and the Sullivan tire-mounted universal. Both are used as bottom cutters. The drills are electric post-mounted Chicago Pneumatic or Dooley types, transported on electrically driven "home-made" rubber-tired trucks. (See Fig. 1.) The coal is shot down by Airdox—a compressed air method installed by the Cardox Corporation which can be used during the working shift. This system is operated by compressors installed on the surface with the air coming to the working

Fig. 1. Cable reel truck for transporting post drill and equipment

Fig. 2. Shuttles load directly into mine cars

places through specially constructed pipelines.

Loading is by Joy 11 B.U. mobile loader with 7-ton shuttles. There are at present eight units operating; some in rooms, some on entry development and others in combinations of entries and rooms. Each unit has a normal crew of about 20 men who do all the work from the face to the main-line locomotive. The tonnage produced depends upon the class of mining—where a unit is entirely on room work, an output of more than 700 tons per shift is not unusual. All production is on the day shift, but there are two or three small crews who work at night—having no regular jobs but doing whatever is needed, from cutting to loading, to put the panels in shape for the following day shift.

One shuttle serves a unit until the rooms have driven in about half-way, when two are used. The extra shuttle does not stand idle between times, but is transferred from one unit to another as needed. The shuttle discharges into mine cars at the room neck through an elevating boom which is a part of the shuttle construction and eliminates the need of any special transfer station or equipment. (See Fig. 2.) The mine cars are loaded in a solid trip, moved by an 8-ton Goodman locomotive which remains coupled to the trip and hauls it to a parting near the mouth of the panel where it is taken by the main-line locomotive to the shaft bottom.

The gathering locomotive has provision for a trolley pole on two sides, which is to keep the trolley wire from interfering with the shuttle loading into the mine car. The rooms are worked off one side of the entry at a time and the trolley wire is strung on the side of the track opposite from these rooms. This procedure is reversed when the other half of the panel is worked.

The mine cars furnished by the Watt Car & Wheel Company are of steel construction, 7-ton capacity, 48 in. high., 14 ft. 10 in. long over-all of bumpers and 78 in. wide, equipped with Ohio Brass automatic couplers and Timken roller bearing wheels. The wheel base is 66 in., which is a special design to have a car with a capacity as high as 7 tons on a 4-wheel truck. The long wheel-base prohibits the use of this car on short curves and practically eliminates it for direct loading at the face. However, it has proven satisfactory for main-line service where the minimum curvature has a radius of 100 feet.

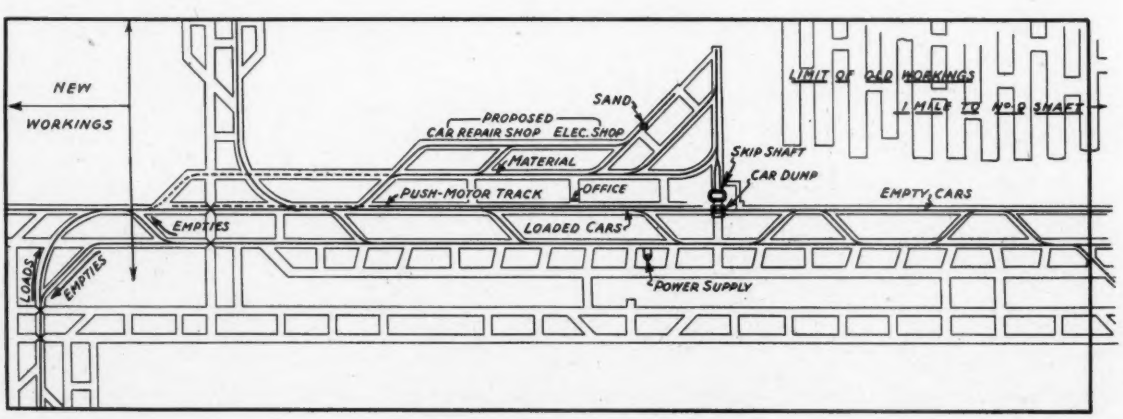


Fig. 3. Plan of tracks at shaft bottom

Efficient Skip Hoisting

At the shaft bottom the mine cars are dumped into the skips by a single car rotary dump. The loads are brought to the side tracks (See Fig. 3) by the main-line locomotive which pulls the trip as close as possible to the dump, then cuts off and goes through one of the break throughs to the empty track where it picks up empties and returns to the working sections. The loaded cars are dumped one at a time without uncoupling; the trip is handled by a 20-ton locomotive, operating on a track parallel to the load track. The locomotive was specially built for this service by the Goodman Manufacturing Company. It has a movable steel arm mounted in the motor frame, hydraulically controlled to move out at right angles across to the loaded track, engaging the end of the mine car and pushing the trip as the locomotive moves forward. After a trip has been moved through the dump, the arm is retracted and the locomotive travels back to get the next trip that has been delivered by the main-line motor. The loaded track approaching the dump is on a level grade but beyond the dump, the track is on a minus 1 per cent, so that the empties will drift forward by gravity.

The coal dumps from the mine car into a 14-ton hopper chute which is divided by a partition into two equal parts, each holding 7 tons, or one skip capacity. The shaft has two skips set side by side for balanced hoisting and these are loaded directly from the dump hopper. The general arrangement as shown in Figure 4, consists of a hinged chute to prevent spillage and a gate to control the coal flow from the hopper. All operations are automatic — the chute is dropped into place by the descending skip and this in turn closes a switch which starts a 3 hp. electric motor that operates the gate, filling the skip. Hoisting reverses these actions—the motor closes the gate and the hinged chute is pulled back into the raised position. The entire installation including the skips was designed and furnished by the Link-Belt Company. (See Figure 4.)

The depth of the coal is 480 ft. from the surface, but the skip sump extends 40 ft. below the seam. This gives the shaft a total depth of 520 ft., and brings the bottom of the sump to 111 ft. below sea level.

The shaft is approximately 9 ft. wide by 18 ft. 4 in. long, with straight parallel sides and rounded ends as shown in Fig. 5. It has two skip compartments, each 7 ft. x 9 ft., but there are no partitions within the shaft; only guides for the skips supported by buntons on 8-ft. vertical centers. The shaft is lined throughout with reinforced concrete of 12-in. minimum thickness.

The skips are of steel construction, approximately 8 ft. square, having a capacity of 300 cu. ft. or 7 tons of coal. They are hoppered for gravity discharge with the skip in vertical position; the hopper bottom is closed by a hinged chute which opens automatically when the skip reaches the unloading point at the top of the head frame. Each skip is also used as a man hoist—a steel grid plate is hinged

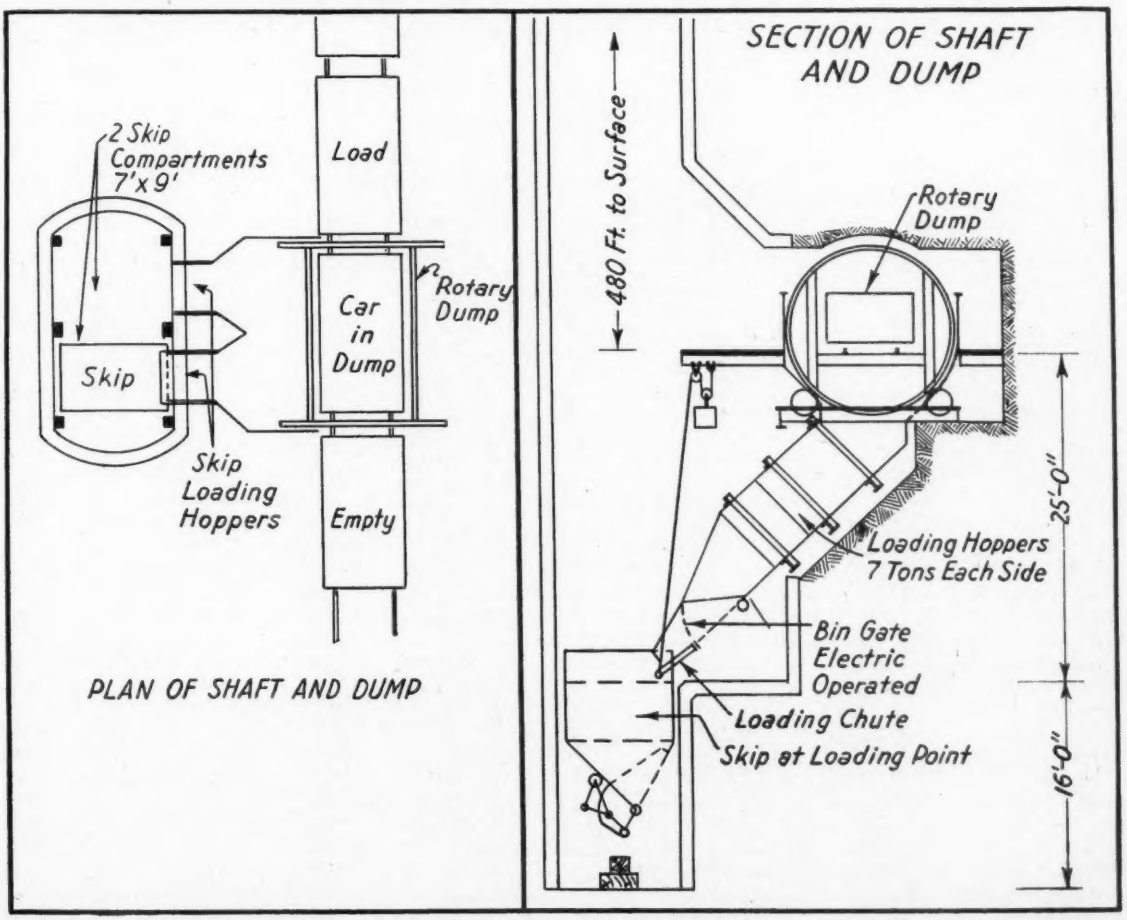


Fig. 5 Fig. 4

Car dumping and skip loading arrangements

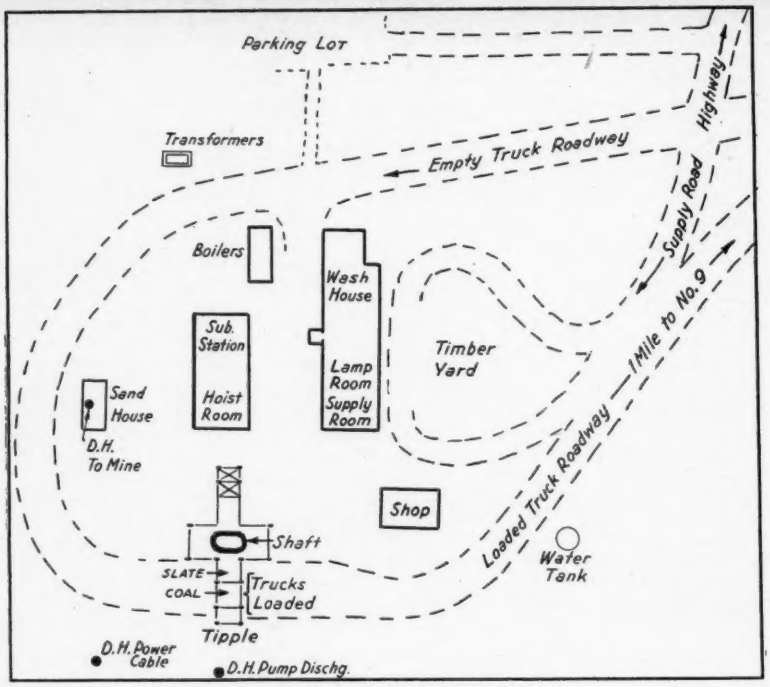


Fig. 6. Surface plant at new shaft

inside the skip near the top, carried in a vertical position when hoisting coal and lowered to form a floor on which the men stand.

New Surface Plant at Original Location

The headframe and tipple is a steel structure and its principal function is to transfer the coal from the skips to the trucks which haul to No. 9 preparation plant. A general view of the tipple is shown on page 34. The coal often comes out in pieces too large to handle and as it dumps from the skip, it is "scalped" over a set of shaking screens which take out the plus 8-in. size. The large pieces pass through a McNally-Pittsburg pick breaker and then go with the screened 6-in. sizes into the truck loading bin which has a capacity of 50 tons. Slate is diverted at the skip discharge into a special refuse bin.

The preparation plant and main shops for large repairs remain in their original location at the old No. 9 shaft while the surface plant at the new shaft site serves as the mine portal and has facilities for handling men and daily supplies. (See Fig. 6.) A large brick building 41 ft. wide by 141 ft. long contains the wash house, lamp house and a supply house for small parts for repairs and replacements used by the underground maintenance crews. This building is equipped with the latest conveniences, is adequately heated by a hot-air blowing system through steam radiators and furnished with water from the West Frankfort city system. There is also a small blacksmith shop for cutting bit and drill sharpening and for minor repairs, and a sand house with a bore hole to the mine.

The hoist house contains the shaft hoist and a sub-station with two 300 kw. motor-generator sets that supply power at 250 volts d.c. to the mine. This is taken underground through a bore hole near the shaft. The present location will serve the mine during the development period, but additional sub-stations, closer to the live workings, will later be installed either underground or on the surface as future plans determine.

A short distance from the shaft is the Airdox compressor house. In this building there are five electric-driven compressors operating at 10,000 lbs. per square inch, automatically starting and stopping, controlled by the demand on the air line. All feed into a common pipe line which goes down the shaft and then branches to the various working sections.

Bottom Dump Trucks Used

The coal is hauled from the skip shaft to No. 9 preparation plant by 30-ton Euclid trucks (see Fig. 6), operating over a privately owned road. At both the loading and unloading points, the roadway has a circular terminal so that the trucks make the complete round-trip without backing or turning. Between these two points, the roadway is a straight line, approximately 1⅛ miles long. The trucks are the bottom-dump type, of special design, unadaptable for "on highway" use, and because of their weight, the construction specifications for the roadway were rather severe.

Refuse from the mine and from the preparation plant is hauled by end-dumping Euclid trucks of 15-ton capacity to the slate disposal located adjacent to the connecting road and about midway between the shaft and the preparation plant. Because the country is flat, the slate is spread over a fairly large area and the approach to the top of the pile is by roadway ramp built of the refuse as the height increases.

At No. 9, the coal trucks dump into a hopper at ground level, which by a reciprocating plate, feeds onto a belt conveyor. This belt is built just under the ground surface, and transports the coal for a horizontal distance of about 200 ft., discharging onto an elevating conveyor at No. 9 tipple. This conveyor takes the coal to the top of the building where it dumps onto shaking screens which make the primary separation that starts the preparation process.

Preparation Plant

The tipple structure, built a number of years ago, has been modernized by the addition of cleaning and sizing equipment into a mechanical preparation plant with Belknap Calcium Chloride washers, and American Air Tables. The screening and blending facilities make possible the preparation of various sizes and combinations of sizes as may be required. Special products require special treatment, but in general, the preparation processes at No. 9 follow the same basic flow plan as used by the Old Ben Corporation at its other plants—briefly described as follows:

The primary sizing, by shaker screens, makes the usual three divisions of lump, intermediate and slack, or more specifically, plus 6 in.; 6 in. x 2 in.; and 2 in. minus. The 6 in. plus is hand-picked for special domestic use. The 6 in. x 2 in. is taken through Belknap washers and the washed product is then screened into various classifications and loaded into railroad cars. The minus ¾-in., which is treated over air tables, can further be broken down into two or more sizes. Dust-proofing by oil treatment follows the cleaning and sizing and the final step for all sizes shipped to authorized dealers is a spray of green paint on the coal as it is loaded into railroad cars. This paint is controlled through copyright

(Continued on page 81)

1947

COAL CONVENTION

and

EXPOSITION

CLEVELAND, OHIO

MAY 12-15

GEORGE H. LOVE
President
Pittsburgh Consolidation Coal Co.
National Chairman, Program Committee

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Mining Engineer

FULL SPEED AHEAD IN COAL MINING

THE Cleveland Public Auditorium will be the magnet of attraction for the entire coal industry when the 1947 Coal Convention and Exposition of the American Mining Congress convenes in its four-day session, from May 12 through May 15. All indications point to the largest and most comprehensive coal mining meeting that has ever been held.

Coal men cannot afford to miss this meeting. With the ending of a long period of wartime emergency and with the industry once more hitting its normal stride, those engaged in coal mining will have their first opportunity in six years to join in a full discussion of their problems and to study simultaneously the latest developments in coal mining equipment.

Cleveland is a most appropriate location for this gathering. Situated but a short distance from our largest coal fields, the industrial strength of this great city rests upon a foundation of coal and iron. With its steel mills, chemical plants, docks, and factories, there are few industrial cities better suited to exemplify the importance of coal to the sinews of American enterprise.

Unusual Program Planned

Believing that the introduction of new ideas is a most important function of this meeting, the Program Committee, under the able chairmanship of George H. Love, president of the Pittsburgh Consolidation Coal Co., has selected for presentation at the Convention sessions a series of papers designed to be of greatest practical value to the coal operator. Mechanization is recognized today as the route to economic success in the coal industry; consequently every effort has been made to emphasize the role of mechanized mining in terms of labor saving, cost reduction, and safe mining practice. Furthermore, it is hoped that operating men who attend will be able to suggest, through discussion, improved methods for the application of existing equipment as well as possible modifications in design to suit future mining conditions. At the machinery display the manufacturer and the operator will be able to compare notes and to check actual performance against planned performance.

Nor has entertainment been forgotten. An informal banquet, a "Miners' Party," and tours for the ladies will feature the lighter side of Convention events.

New Developments to Feature Program

Two papers of unusual interest will be presented at the opening general session on Monday morning. The keynote speaker will be C. J. Potter, assistant to the president, Rochester and Pittsburgh Coal Co., who will review the labor and economic problems faced by the coal industry. The second topic will be a discussion on the "heat pump." E. R. Ambrose, air conditioning engineer, American Gas and Electric Service Corp., will explain

this latest development. The "heat pump" is attracting national attention amongst architects and engineers as it offers a possible method of economical utilization of electric power in the field of residential heating. Curiously enough, the basic "heat pump" is a mechanical refrigerator in reverse. The ordinary refrigerator absorbs heat from inside the "icebox," exhausting it to the air and wasting the energy. The "heat pump" operates on the same principle but utilizes the heat (created by compression of the fluid medium) in a circulating hot-air system. As a means of providing automatic home heating through use of coal-generated electricity, this new development is of distinct interest to the coal mining industry.

Mechanization—the Key to Success

On Monday afternoon the Convention will open its series of operating sessions. Stress will be placed upon the latest developments in mechanization—topics will be presented in a down-to-earth manner enabling full discussion by all in attendance and designed to stimulate interchange of operating ideas. For deep mining there will be five sessions embracing: Safety, Mechanical Loading, Underground Haulage, Gathering Haulage, and Face Preparation.

At a surface preparation session new developments in coal cleaning and preparation practice will be reviewed. Papers will be presented on: the recovery of commercial coal from mine refuse, laboratory control of washing plants, and classification of water in closed water circuits.

Subjects to be discussed at the session on mechanical loading will be: operation with power duckbills, operation with shortwaloaders, mechanical loading with large crews and high tonnages, and mechanical loading with small crews and low tonnages. Two sessions devoted to underground and gathering haulage will review: economic limits of shafts and slopes, supply haulage in trackless mining, the handling of supplies and repairs in shaft mines, the effect of mine-car capacity on mechanical loading efficiency, time studies to improve shuttle gathering, and prefabricated track for mobile loading. At the face preparation session there will be papers covering bug dusters on shortwall cutters, trackless cutting, tire mounted drills, and mine timbering machines.

Safety to be Stressed

A safety session is scheduled for the afternoon of the first day's meeting. Mine fire prevention, man-trips underground, and a review of safety progress in the coal mining industry are to be covered. With emphasis on accident prevention and safe mine operation, this session promises to be most instructive.

R. H. MORRIS
Chairman

C. M. GUTHRIE
Vice Chairman

Floor Committee

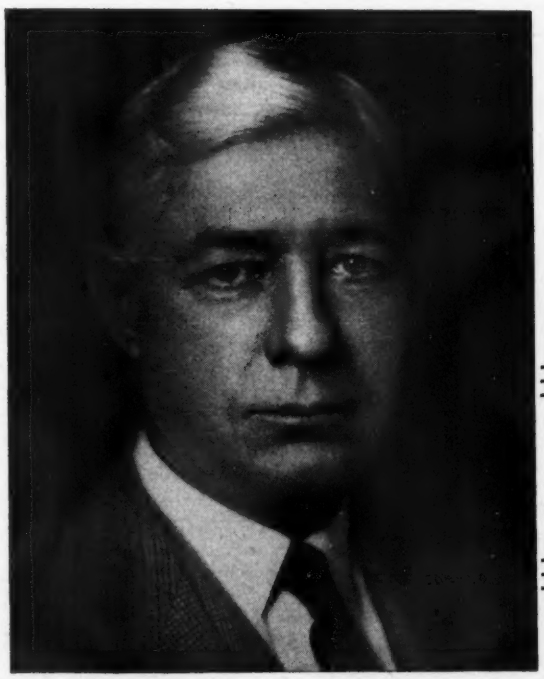
Three Strip Mining Sessions Planned

The increased importance of strip operations is indicated by the scheduling of three full meetings from Tuesday through Thursday devoted to this subject. There will be papers by many of the foremost operators in the industry, a few of the subjects being: drilling and shooting practice in both anthracite and bituminous strip mining, the handling of overburden, and increased efficiency in stripping machinery through use of alloy steel equipment. Reclamation will feature the final coal stripping session on Thursday morning, with the Land Use Committee of the National Coal Association presenting reports from representatives of the various strip mining states.

Open Meetings of Coal Division

The work of the Coal Division of the American Mining Congress, under the chair-

HARRY M. MOSES
President
H. C. Frick Coke Co.
Chairman, Coal Division



THOMAS McNALLY
President
McNally-Pittsburg Mfg. Corp.
Chairman, Manufacturers Division

★ ★ ★ PROGRAM

MONDAY, MAY 12

10:00 A. M.—GENERAL SESSION

Phases of Labor and Economics

C. J. POTTER, *Assistant to President, Rochester & Pittsburgh Coal Co.*

The Heat Pump for Comfort, Heating and Cooling

E. R. AMBROSE, *Air Conditioning Engr., American Gas & Electric Service Corp.*

2:15 P. M.—SURFACE PREPARATION SESSION

Recovery of Commercial Coal from Mine Refuse

A. F. CASTANOLI, *Robinson & Robinson, Consulting Engineers*

Laboratory Control of Washing Plants

JACK M. BISHOP, *Chemist, Truax-Traer Coal Co.*

Clarification of Washery Water in Closed Water Circuits

S. M. PARMLEY, *Asst. Chief Engineer, Pittsburgh Coal Co.*

2:15 P. M.—SAFETY SESSION

The Mining Industry's Safety Progress

C. G. BREHM, *Supervisor of Safety, Susquehanna Collieries Co.*

Mine Fires—Their Prevention and Control

E. F. MAURER, *General Superintendent, Rail & River Coal Co.*

Man Trips Underground

P. M. CASSIDY, *Safety Inspector, Sloss-Sheffield Steel & Iron Co.*

TUESDAY, MAY 13

10:00 A. M.—MECHANICAL LOADING SESSION

Mining Methods With Power Duckbills

JOHN PSCHIRRER, *Vice President, Pschirrer & Sons Coal Co.*

Mining Methods With Shortwaloaders

C. E. HOUGH, *General Superintendent, American Rolling Mills Co.*

Mechanical Loading With Large Crews and High Tonnage

G. N. MCLELLAN, *Superintendent, Weirton Coal Co.*

Mobile Mechanical Loading With Small Crews

JOSEPH F. MAZZA, *Manager of Maintenance, Rochester & Pittsburgh Coal Co.*

10:00 A. M.—STRIP MINING SESSION

New Developments Necessary for Strip Mining

J. W. WOOMER, *Mining Engineer, Wheeling, W. Va.*

Drilling and Shooting Practices in Anthracite Strip Mining

G. A. SCHNEE, *Division Engineer, Philadelphia & Reading Coal & Iron Co.*

Drilling and Shooting Practices in Bituminous Strip Mining

FRED HORNE, *Sinclair Coal Co.*

10:00 A. M.—COAL DIVISION COMMITTEE

Mine Haulage With Tracks and Belts

COMMITTEES ON HAULAGE ROADS AND CONVEYOR MINING

Underground Power Systems

COMMITTEE ON POWER

7:00 P. M.—MINERS' PARTY

Meet the Speakers...

ON PAGES 48, 49, 50

WEDNESDAY, MAY 14

10:00 A. M.—UNDERGROUND HAULAGE SESSION

Economic Limits of Shafts and Slopes

C. C. Conway, *Electrical Engineer, Consolidated Coal Company*

Supply Haulage in Trackless Mining

Robert Fletcher, *Consulting Engineer, J. H. Fletcher & Company*

Handling Supplies and Repairs in Shaft Mines

H. A. Quenon, *Superintendent, Koppers Coal Div.*

10:00 A. M.—STRIP MINING SESSION

Methods of Handling Overburden in Anthracite Strip Mining and Factors Determining Practices

J. Robert Bazley, *President, J. Robert Bazley, Inc.*

Handling Overburden in Bituminous Strip Mining

Lafe Stewart, *Chief Engineer, Maumee Collieries Company*

Armor Plate Steels Increase Capacity and Range of Stripping Shovels

A. F. Busick, Jr., *Chief Engineer, Marion Power Shovel Company*

10:00 A. M.—COAL DIVISION COMMITTEE

Pillar Recovery Methods

Committees on Mechanical Loading and Roof Action

Full Seam Mining

Committees on Mechanical Loading and Surface Preparation

THURSDAY, MAY 15

10:00 A. M.—GATHERING HAULAGE SESSION

Effect of Mine Car Capacity on Mechanical Loading Efficiency

J. D. Reilly, *General Mgr., Underground Mines, Hanna Coal Company*

Time Studies to Improve Shuttle Gathering

David R. Mitchell, *Head, Dept. of Mineral Engineering, and*
Richard L. Ash, *Research Assistant, Division of Mining, Pennsylvania State College*

Pre-Fabricated Track for Mobile Loading

Sterling Lanier, III, *Assistant Superintendent, Norton Coal Corporation*

10:00 A. M.—STRIP MINING SESSION

Reclaiming Stripped Lands

Land Use Committee, *National Coal Association, with Reports from Representatives of Strip Mining States*

2:15 P. M.—FACE PREPARATORY SESSION

Bug Dusters on Shortwall Cutters

Ralph Perry, *Chief Engineer, Sahara Coal Company*

Tire Mounted Cutting Machines for Trackless Mining

G. R. Higinbotham, *Vice Pres., Operations, Consolidation Coal Company, W. Va.*

Tire Mounted Drills for Trackless Mining

C. M. Shott, *Vice Pres., Sheridan-Wyoming Coal Company*

Mine Timbering Machines

Harry S. Gay, *Vice Pres., Gay Coal & Coke Company*

2:15 P. M.—COAL DIVISION COMMITTEES

Accident Prevention in Coal Mining

Committees on Safety and Mine Ventilation

6:30 P. M.—ANNUAL DINNER

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*Westinghouse Electric Corp.
West Virginia Steel & Mfg. Co.
Worthington Pump & Machinery Corp.

MEET the Speakers

• CHARLES J. POTTER, Assistant to the President, Rochester and Pittsburgh Coal Company, Indiana, Pa., who is widely known throughout the coal industry and who is thoroughly familiar with present problems and future trends will speak on PHASES OF LABOR AND ECONOMICS.

• E. R. AMBROSE, Air Conditioning Engineer, American Gas & Elec. Service Corp., 30 Church Street, New York, N. Y., will describe THE HEAT PUMP FOR COMFORT, HEATING AND COOLING—a revolutionary device which utilizes the temperature of the earth strata.

• A. F. CASTANOLI, Consulting Engineer, Robinson & Robinson, Charleston, W. Va., will describe how the RECOVERY OF COAL FROM MINE REFUSE is increasing the mine yield and reducing operating costs.

• JACK M. BISHOP, Chemist, Truax-Traer Coal Company, Kayford, W. Va., will explain how LABORATORY CONTROL OF WASHING PLANTS used by his company ties in the three departments of mining, preparation and sales.

• E. F. MAURER, General Supt., Rail & River Coal Co., Bellaire, Ohio, in his paper on MINE FIRE PREVENTION will discuss fire hazards underground and also fire fighting equipment for mine use.

• C. G. BREHM, Supervisor of Safety, Susquehanna Collieries Co., Nanticoke, Pa., will present a statistical analysis of the accident records over past years, showing THE MINING INDUSTRY'S SAFETY PROGRESS as compared to other industries.

• P. M. CASSIDY, Safety Inspector, Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., will discuss MAN TRIPS UNDERGROUND, describing the procedure and equipment for transporting men quickly and safely to their working places.

• JOHN PSCHIRRER, Vice President, Pschirrer & Sons Coal Co., Canton, Ill., will describe MINING METHODS WITH POWER DUCKBILLS, giving the complete cycle of operations in a working panel.

• C. E. HOUGH, General Supt., American Rolling Mill Co., Montcoal, W. Va., will describe MINING METHODS WITH SHORTWALOADERS, giving his experience in the application of this type of equipment to various seam characteristics and conditions.

• S. M. PARMLEY, Assistant Chief Engineer, Pittsburgh Coal Co., Library, Pa., will explain the principles of CLARIFICATION OF WASHERY WATER IN CLOSED CIRCUIT, describing the equipment and results at an installation of his company.

• G. N. McLELLAN, Superintendent, Weirton Coal Company, Isabella, Pa., will explain how MECHANICAL LOADING WITH LARGE CREWS by producing high tonnages, reduces the operating cost of the unit.

• JOSEPH F. MAZZA, Manager of Maintenance, Rochester & Pittsburgh Coal Co., Indiana, Pa., will bring out the advantages of MOBILE MECHANICAL LOADING WITH SMALL CREWS based on his operating experience at the mines of his company.

• J. W. WOOMER, Mining Engineer, Wheeling, W. Va., will explain the NEW DEVELOPMENTS NECESSARY FOR STRIP MINING, pointing out what special problems are being faced in drilling, loading and hauling.

• FRED HORNE, Sinclair Coal Company, Kansas City, Mo., in his paper on DRILLING AND SHOOTING PRACTICES IN BITUMINOUS STRIP MINING, will describe blasting methods at actual stripping operations using various types of drills and explosives.

• G. A. SCHNEE, Div. Engr., Philadelphia & Reading Coal & Iron Company, Ashland, Pa., will discuss DRILLING AND SHOOTING PRACTICES IN ANTHRACITE STRIP MINING, comparing performances and results at two open pit operations in different fields.

• C. C. CONWAY, Electrical Engineer, Consolidated Coal Company, Herrin, Ill., will present a discussion on ECONOMIC LIMITS OF SHAFTS AND SLOPES, which will be based on actual experiences of his own company.

• ROBERT FLETCHER, Consulting Engineer, J. H. Fletcher Co., Chicago, Ill., will show methods of SUPPLY HAULAGE IN TRACKLESS MINING in operations with shaking conveyors, chain conveyors and rubber tired gathering equipment.

• H. A. QUENON, Gen. Supt., Koppers Coal Division, Grant Town, W. Va., in his paper on HANDLING SUPPLIES AND REPAIRS IN SHAFT MINES will tell how a difficult operating problem was overcome by the addition of adequate facilities.

MEET THE SPEAKERS
Continued Next Page

• J. ROBERT BAZLEY, President, J. Robert Bazley, Inc., Pottsville, Pa., will discuss various types of present and future open pit operations, explaining METHODS OF HANDLING OVERBURDEN IN ANTHRACITE STRIP MINING AND FACTORS DETERMINING PRACTICES.

• STERLING LANIER, III, Assistant Superintendent, Norton Coal Mining Company, Nortonville, Ky., will explain how PRE-FABRICATED TRACK FOR MOBILE LOADING is used to reduce the cost of gathering in track operated equipment.

• A. F. BUSICK, Jr., Chief Engineer, Marion Power Shovel Co., Marion, Ohio, will discuss modern design and construction problems with particular reference to how ARMOR PLATE STEELS INCREASE CAPACITY AND RANGE OF STRIPPING SHOVELS.

• J. D. REILLY, General Manager, Underground Mines, Hanna Coal Company, St. Clairsville, Ohio, will show the EFFECT OF MINE CAR CAPACITY ON MECHANICAL LOADING EFFICIENCY, discussing different types of gathering track lay-outs and operating methods.

• DAVID R. MITCHELL, Head, Department of Mineral Engineering, the Pennsylvania State College, and ROBERT L. ASH, Research Assistant, Division of Mining, the Pennsylvania State College, will present a joint paper on TIME STUDIES TO IMPROVE SHUTTLE GATHERING, summarizing shuttle operations studied in 30 mines.

• LAFE STEWART, Chief Engineer, Maumee Collieries Company, Terre Haute, Ind., will describe HANDLING OVERBURDEN IN BITUMINOUS STRIP MINING, showing methods developed for handling increasing depths of overburden.

• RALPH G. PERRY, Chief Engineer, Sahara Coal Co., Harrisburg, Ill., describes the operating method and outlines the advantages of an operation with BUGDUSTERS ON SHORTWALL CUTTERS.

• G. R. HIGINBOTHAM, Vice President-Operations, Consolidation Coal Company of West Virginia, Fairmont, W. Va., will describe the use of TIRE MOUNTED CUTTING MACHINES FOR TRACKLESS MINING, presenting time studies, maintenance costs and operating details in his field.

• C. M. SHOTT, Vice President, Sheridan Wyoming Coal Company, Monarch, Wyo., speaking on TIRE MOUNTED DRILLS FOR TRACKLESS MINING, will show past and present practices to illustrate progress in face preparatory methods.

• HARRY S. GAY, Vice President, Gay Coal & Coke Company, Mt. Gay, W. Va., who developed MINE TIMBERING MACHINES, will explain how such a device adds to the productivity of the mechanical loading unit.

manship of Harry M. Moses, president, H. C. Frick Coke Co., has been an important factor in the development of many of the improved practices prevalent today in coal mining. This year a new feature will be inaugurated at the Convention; the Coal Division Committees will hold open meetings where reports will be presented for discussion by all present. Three sessions are scheduled from Tuesday through Thursday and all visitors are cordially invited to attend and to participate in the program. Topics to be reported on will be: mine haulage with tracks and belts, underground power systems, full seam mining, pillar recovery methods, and coal mine accident prevention methods.

An Equipment Display Second to None

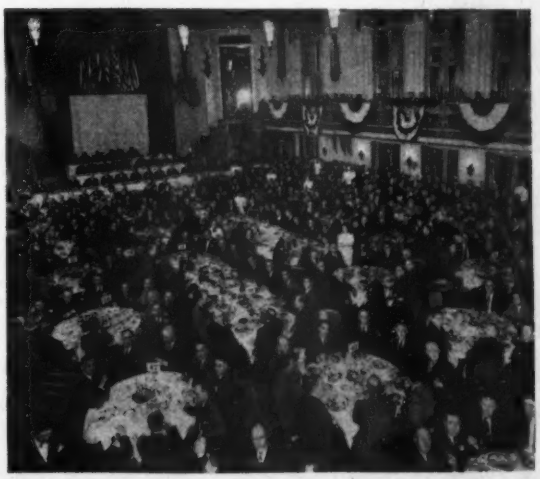
The Manufacturers' Division of the American Mining Congress, under the chairmanship of Thomas McNally, president, McNally-Pittsburg Manufacturing Co., is sponsoring what will be the most complete and comprehensive exhibit of coal mine machinery ever presented. As the Cleveland Exposition Hall was specifically designed for large displays, the visitors will be able to view the exhibits under ideal conditions. Much of the machinery will be shown in actual operation.

To date 175 of the leading mining equipment manufacturing companies have planned to be represented. Every type of equipment applicable to coal mining, cleaning, and preparation will be on view. Included will be such items as: drills, safety equipment, mine cars, jacks, prefabricated track, explosives, cable for all uses, pumps, loaders, shuttle cars, conveyor belts, electrical devices, screens, storage batteries, and countless other products—all of interest to those engaged in coal mining. Manufacturers are, for the first time since the war, offering new products and it will be possible for visitors to discuss the application of these items with the many manufacturers' representatives and engineers present for this purpose. Much study and attention has been devoted to the preparation of displays for this first full-scale exposition since 1941; and the visitor will observe that despite wartime restrictions, the industry has not been static. Improved equipment is the rule rather than the exception despite material shortages and the difficulties of retooling during the past year. In order to afford visitors an opportunity to inspect the exhibits without conflict with other events, no meetings are scheduled for Tuesday and Wednesday afternoons.

R. L. IRELAND, JR.
Chairman
Welcoming and
Entertainment
Committees

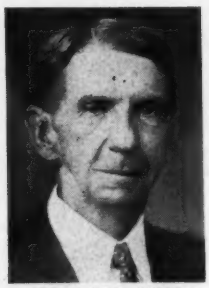
WHITNEY WARNER, JR.
Vice Chairman
Entertainment

F. J. NELSON
Vice Chairman
Welcoming



Entertainment Features

The Welcoming and Entertainment Committee, under the chairmanship of R. L. Ireland, Jr., president, Hanna Coal Co., has made every effort to insure a real get-together under informal circumstances for all visiting coal men. On Tuesday evening there will be a "Coal Miners' Party" at the Hotel Statler. This will include dinner, dancing, and a floor show. The Annual Banquet is scheduled for Thursday night at the Hotel Carter. The speaker for this occasion will be Dr. Gus Dyer, economic advisor to the Southern States Industrial Council at Nashville, Tenn. Dr. Dyer was formerly connected with Vanderbilt University, where he held a chair in economics until his retirement after 30 years of service. Noted for his salty wit and the ability to pack a punch in his oratory, Dr. Dyer's reputation as a banquet speaker is nation-wide. No entertainment is planned for Monday and Wednesday evenings; this will give an opportunity for renewing old friendships amongst the visiting coal men and for informal gatherings.



DR. GUS W. DYER
Banquet Speaker

Special Program for the Ladies

The program for the ladies will open on Monday, when there will be a luncheon at the Hotel Statler. On Tuesday a fashion show, luncheon, and bridge is scheduled at The Higbee Co., one of Cleveland's leading department stores. A motor tour will offer the visiting ladies an opportunity to see the sights of Cleveland on Wednesday afternoon. This tour will leave the Statler Hotel shortly after lunch and will traverse the waterfront of Lake Erie for about 5 miles; thence through Gordon and Wade Park to the gardens around the Cleveland Museum of Art. After the tour, the visitors will be entertained at tea at the home of Mrs. R. L. Ireland, Jr. The return trip will lead through the beautiful Shaker Heights residential area and thence downtown through Playhouse Square, to the hotels. No scheduled entertainment is planned for Thursday but there will be an opportunity for those who so desire to visit the Cleveland Museum of Art, where there is housed a splendid collection of modern paintings.

American Mining Congress Officials

HOWARD I. YOUNG
President

JULIAN D. CONOVER
Secretary

P. D. McMURRER
Exposition

G. B. SOUTHWARD
Program

H. L. MOFFETT
Publicity

EXPOSITION PREVIEW

THE largest display of coal mine equipment that has ever been held will be presented at the Cleveland Exposition Hall from May 12 to May 15. More than 175 of the Nation's leading suppliers are cooperating in this showing of almost every conceivable aid to coal production. Every effort has been made to arrange exhibits of practical value to the visitor. In many cases machinery will be shown in operation to permit study of performance characteristics.

The Exposition is sponsored by the Manufacturers Division of the American Mining Congress, under the chairmanship of Thomas McNally, president of the McNally-Pittsburg Manufacturing Company. This is the first full-scale exposition that has been held since 1941, and the manufacturers are taking full advantage of the opportunity to show the industry all the developments in machines and equipment that have been made since that time. Many new machines will be shown for the first time and all the exhibits will reflect the valuable manufacturing experience gained during the war years. That the lid's off again on progress in mining equipment will be clearly demonstrated at Cleveland.

In the following pages you will find a brief preview of the Exposition. This outlines a few of the highlights of the individual exhibits but there are many features too numerous to be included. Check the exhibits that you especially want to see but be sure to allow ample time to see them all.

• AHLBERG BEARING CO.

Will exhibit its line of standard ball bearings, self-aligning ball bearings, ball bearing pillow blocks and Bower tapered roller bearings. It is also planned to show the new package assembly of mine car roller bearings and seals with a cut open wheel on display.

• ALEMITE DIVISION—STEWART-WARNER CORP.

The equipment to be exhibited consists of lubrication devices in the form of pumps, buckets and hand guns used in the coal industry, along with several attractive display panels of different centralized lubrication systems.

• ALLIED STEEL PRODUCTS, INC.

No description received.

• ALLIS-CHALMERS MFG. CO.

A 5 x 12-ft. double-deck Ripl-Flo screen equipped with new automatic balance wheels and rubber mountings will be displayed along with a 6 x 16-ft. single-deck Low-Head screen. Also to be shown for the first time will be an operating display of a 1½ x 1½-in. new close-coupled design self-priming pump. By means of transparent tanks and piping the mechanical operation will be demonstrated. A one-quarter size scale model of a 10 x 8-in. solids handling pump, together with a full-size pump of

the same type, and a 2 x 2-in. electrifugal pump, will also be shown. Backgrounds will consist of colored, illuminated pictures of unit substations, three-phase induction motors, mine type rectifiers, Texrope drives and speed-changers, screens, solids handling pump, 200 Ampac portable welder, electrifugal pumps and mine hoists. *In charge—Alex. H. Schlueter.*

• **AMERICAN BRATTICE CLOTH CORP.**

This exhibit will feature two principal products: ABC Jute Brattice Cloth and Mine Vent Flexible Tubing. Photographs and samples on the use of these products in the mining industry will be available, with experienced personnel to answer all questions. A sample of the Mine Vent Demountable Coupling will be available for demonstration purposes showing actual coupling operations. *In charge—D. Blaine Mikesell.*

• **AMERICAN CAR AND FOUNDRY CO.**

Will display a new ACF design, large capacity, eight-wheel automatic drop-bottom mine car. The car is 29 ft. long over couplers and 7 ft. wide over sides and 4 ft. high above rail. Trucks are bolster-type, through-axle, fitted with ACF chilled tread wheels. The car has a capacity of 10 tons level full with 6 in. average surcharge 12 tons capacity. In addition an ACF rocker-type door closing device which is used for automatic closing of drop-bottom car doors, will also be shown. An ACF reversible-type door tripping device which is used for automatic unlatching of drop-bottom car doors as cars pass over the dump hopper will also be featured. *In charge—F. J. Bogard.*

• **AMERICAN CHAIN & CABLE CO., INC.**

American Cable Div. and Hazard Wire Rope Div.

This display will consist of samples of Tru-Lay and Lay-Set Preformed Wire Ropes, and Crescent and Nonparell Non-Preformed Wire Ropes, as used in mining operations. Also available will be samples showing the various types of construction. This type of rope is used for underground shaft hoists, incline and slope ropes, mining machine cables, slusher ropes, car retarders, and in strip-mining operations for electric shovels, drag lines and clamshell cranes.

• **AMERICAN CYANAMID CO.**

Explosives Department

Representatives of Cyanamid's Explosives Department will be on hand to discuss explosive and blasting problems. The Mineral Dressing Division will also have representatives present to talk about heavy-media separation processes and chemicals used in the mining industry. *In charge—H. I. Phemister.*

• **AMERICAN MINE DOOR CO., THE**

Three pieces of equipment will be shown at this booth. The Mighty Midget rock duster, a portable machine weighing 280 lb. can be easily lifted by two men into a coal car or other means of transportation. The automatic switch thrower will also be displayed. This piece of equipment requires no attendant at the switch point and as the motorman is not required to lower the speed of the trip, it is claimed that haulage is expedited with increased safety. The third piece of equipment will be a track cleaner designed to remove the dirt from between the rails to the level of top of ties, and the gob from sides of track to a distance of 48 in. from center of track gauge. The machine is designed so that plow blades raised independently or lowered and adjusted to maximum or minimum widths. The digger plate can be rapidly lowered or raised for tramming or passing frogs. It is claimed that this machine has loaded a ton of dirt in a minute of time.

• **AMERICAN STEEL & WIRE CO.**

(See U. S. Steel Corp.)

• **ANACONDA WIRE & CABLE CO.**

The exhibit will consist of models showing the actual application of various types of wire and cable in the coal industry. Broad emphasis will be placed on Anaconda's two-conductor, parallel cable with ground wire which is designed to afford easy methods for grounding of equipment and increasing the safety factor as required by new mining regulations.

• **ANDERSON MFG. CO., ALBERT & J. M.**

Battery charging and general purpose plugs and receptacles will feature this exhibit. Other products to be shown are heavy duty switches, time switches, welding tools and multi-outlet power distribution device, a circuit protection unit incorporating the latest improvements, and a circuit breaker for the protection of portable equipment. *In charge—F. C. Messenger.*

• **ARMCO DRAINAGE & METAL PRODUCTS, INC.**

A full-scale arched mine entry of fabricated steel tunnel liner plates will predominate the exhibit of this firm. The arch will be supplemented by a life-size photo of an entry with a belt conveyor and track. The liner plates are the same type as used for vertical air shafts, escapeways, overcasts and electrical substations. Also shown will be standard, prefabricated Steelox buildings which can be quickly erected for permanent use or be dismantled for repeated use. Other products include welded steel pipe for carrying water to and from washer plants, portable, quick-coupling air pipe in small diameters, corrugated metal pipe for drainage, metal retaining walls, sheeting and other products for construction or maintenance purposes. *In charge—W. H. Spindler.*

• **ATLAS POWDER CO.**

Is featuring its latest developments in explosives and blasting methods in both underground and stripping work. The Rockmaster system, a milli-second delay blasting method, will be featured for stripping operations, with displays emphasizing elimination of complaints about noise and vibration. One section of the display will feature specially packed permissibles for underground work. *—In charge—John L. Romig.*

• **AUSTIN POWDER CO.**

No description received.

• **BAKER-RAULANG CO.**

(See Barber-Greene Co.)

• **BARBER-GREENE CO.**

A section of a mine conveyor and a cutaway B-G Troughing Idler will be on display, backgrounded with an illuminated grouping of large colored photo-murals and 8x10 kodachrome transparencies. Colored movies of Barber-Greene mine conveying equipment in action will also be shown. *In charge—Harold Newton.*

• **BARRETT, HAENTJENS & CO.**

Will feature the new "Hazleton" type "VS" pump and a new "Hazleton" self-priming gathering pump in addition to the regular line of coal mine and washery pumping equipment. Included in the regular line of pumping equipment will be the type "M" and the type "MT" check valves, the auto-strainer and the type "MS" strainer, the hand priming pump and the motor drive priming pump, priming valves, plug valves, air relief valves, priming chamber, vacuum breaker, sump electrode and relay panel for automatic pump operation. The "Hazleton" portable pump will also be on display together with installation photos of coal mine and washery units.

• **BEARING SERVICE CO.**

"BSC" ball and roller bearings will feature the exhibit. The display will include radio ball bearings, single and double row, self-aligning ball bearings, cylindrical roller

bearings, ball thrust bearings, roller thrust bearings and other types of anti-friction bearings and units used in the coal industry. Also on display will be the "BSC" motor cartridge unit and the "BSC" conveyor replacement unit.

• **BECKLEY MACHINE & ELECTRIC CO.**

No description received.

• **BETHLEHEM STEEL CO.**

Prefabricated mine track will be the feature of the Bethlehem Steel Company's exhibit. This type of prefabricated track lay-out is designed for each individual installation and prefabricated in the shop. The track is shipped knocked-down and the rail lengths are such that no more than two track men are needed to handle any of its elements. The exhibit will also include enlarged photographs of installations of steel mine ties, mine rail, turnouts, crossings, double switches, frogs, mine cars and hollow drill tool steel. Products on display will be steel mine ties, a complete switch with switch stand and target, a mine car truck for a ten-ton, eight-wheel mine car and hollow drill tool steel. There will also be a rope display consisting of a working model of an incline plane showing the application of wire rope. Samples of wire rope used in the mining field will also be shown. *In charge —A. A. Warg.*

• **BIRD MACHINE CO.**

Featured will be the Bird Continuous Centrifugal Filter for the drying of fine coal after it leaves the cleaning system. A full size machine specially arranged for ready inspection of its "innards" will be the feature of the exhibit. This filter may be used in any cleaning system and it delivers the fine coal dry and whole, ready for blending with the larger sizes. The filter is weighted at 40 tons or more per hour and takes up somewhat less than 150 sq. ft. of space. *In charge—George Sherrerd.*

• **BITUMINOUS COAL INSTITUTE, THE**

Will show, visually and dramatically, what it is doing to foster better public relations for the coal industry. Examples of its national advertising aimed at five vital sections of American opinion will be displayed in "blow-ups." Copies of its booklets, charts, releases, maps, constructive articles and news items, illustrative of its publicity methods, will be distributed. How America is dependent on coal for its daily needs, besides its importance for our light, heat and power, will be especially dramatized. A BCI sound-film, "The Magic of Coal," will be shown. Some of the most useful of coal's myriad by-products will be featured. An illuminated set of figurines showing comparative earnings in major industries, with special reference to the bituminous miner, will be displayed. Correction of the textbooks which feed 17 million school children daily with outworn information on bituminous coal; the work of over 200 members of the BCI Speakers' Bureau and the 350 speeches they have made before opinion-making citizens in two short seasons; photographs of BCI exhibits already held before the nation's million educators—all these, work of the institute's educational department, will be in evidence.

• **BIXBY-ZIMMER ENGINEERING CO.**

No description received.

• **BOWDIL CO., THE**

The background of this display will show various products manufactured by the company and along one side facing the front aisle, will be a full size 91-track cutter bar and chain, mounted on an enclosed frame, a geared motor inside turning the chain slowly. The moving parts will be enclosed with transparent safety guards and the inside of the frame extension will have ample room for showing sprockets and smaller items. *In charge—Charles L. or Floyd T. Bowman.*

• **BRODERICK & BASCOM ROPE CO.**

This exhibit will consist of wire rope as well as Yellow Strand Braided Safety Slings. These slings are designed for use in mine machine shops and maintenance departments.

• **BROWN-FAYRO CO., THE**

Plans to exhibit five items as follows: the Model HP Post Puller, complete with permissible electrical equipment and cable reel. The machine will be mounted on special tract set-up to permit demonstration of its operation. The Model HM Car Spotter arranged with a special track set-up, utilizing new twin barneys to provide for continuous movement of cars past a loading point. The Model HKM Car Spotting Hoist, rated 6,000 lb.; Model HGD Rigging Hoist, arranged with heat treated steel gear, mounted on a boat-type base, rated 2,000 lb., rope pull at 70 fpm. The Model PF Perfect Oiler Mine Gathering Pump, complete with V-Belt drive and 5 x 6 water end. This unit is provided with a steel boat-type base which incorporates a Universal motor mounting. *In charge—F. M. Davis.*

• **BUCYRUS-ERIE CO.**

No description received. *In charge—E. M. Heuston.*

• **BUDA CO., THE**

Three new modern Diesel engines for use on trucks and haulage equipment will be displayed. Two of these engines are supercharged types and all three represent the latest engineering design with many new features for applications on trucks in strip mines operations. In addition models of Buda Jacks for mine use will also be shown as well as the new Universal Buda Diesel Nozzle Tester—a portable tester which is suitable to all makes and models of Diesel injectors and nozzles.

• **CARDOX CORP.**

Plans to exhibit the new Cardox Mine Fire Car; the Cardox Transitank, a portable fire-fighting unit; a Cardox-Hardsocg vertical drill for use in strip mining; Cardox-Hardsocg drilling equipment including augers, cutter heads, bits, thread bars and boxing for both underground and surface drilling. The standard Cardox mining equipment for dislodging coal will be featured in the exhibit. *In charge—John Bell* and *Fred See.*

• **CARNEGIE-ILLINOIS STEEL CORP.**

(See U. S. Steel Corp.)

• **CENTRAL STATES INDUSTRIAL SUPPLY CO.**

Plans to display vulcanization of conveyor belting splices and vulcanized repairing of this material. A work bench will be set up and the complete process of making belts endless will be demonstrated. A display of various mechanical rubber products constructed by the Goodyear Tire & Rubber Co., will call attention to the other products handled applicable to the coal industry. Also on display will be vulcanizing equipment and tools which are distributed by this company. *In charge—W. R. Conrad.*

• **CENTRIFUGAL AND MECHANICAL INDUSTRIES, INC.**

This company will have available literature on equipment at their booth. *In charge—P. W. Bigley.*

• **CESCO MFG. CO.**

No description received.

• **CHEATHAM ELECTRIC SWITCHING DEVICE CO.**

Will exhibit electrically operated track switches; automatic electric derails; automatic block signals; trolley contact devices; manually operated control switches; switch position indicators; warning signals and other electrical devices for safeguarding and expediting movements of electric locomotives over main line tracks. *In charge—Everett Brown and Charles R. Marcum.*

• **CHESAPEAKE & OHIO RAILWAY**

No description received.

• **CHICAGO PNEUMATIC TOOL CO.**

This exhibit will feature the new Chicago Pneumatic "Tramdrill"—a self-propelled, rubber-tired electric coal drill. A complete line of hand-held and post-mounted electric drills will also be shown, as well as pneumatic impact wrenches and rock drills.

• **CINCINNATI MINE MACHINERY CO., THE**

The exhibit will consist of a new arrangement of two complete cutterbar units of latest design mounted one over the other. A Cincinnati Standard Chain in one and a Duplex Chain in the other will be threaded through these bars and, with cutter bits in position, will depict the working portion of a coal cutter ready for action. Numerous additional chain units exemplifying the line of coal cutting chains manufactured by the company will also be displayed. A symbolic mounting of the Duplex Bit accompanied by a novel lighting arrangement will add to the attraction. *In charge—A. O. Bruestle or John R. Cartlidge.*

• **CITIES SERVICE OIL CO.**

Will feature "Service Proved" petroleum products for the coal industry, including "Sealed Lubrication" and "Heat Prover." *In charge—B. B. Mears.*

• **CLARKSON MANUFACTURING CO.**

Will feature the 24BB track loader. This loader operates on 36-in. coal and still has a high loading capacity. The entire machine is operated by one 50 h.p. motor which is made especially for the Clarkson Loader. Both front and rear conveyors are universally flexible and the rear loading conveyor accepts any car from 20 in. up to 8 ft. in height. *In charge—Clyde E. Clarkson.*

• **CLEVELAND WORM & GEAR CO., THE**

Will exhibit in conjunction with its affiliated organization, The Farval Corporation. The Cleveland Worm & Gear Company will feature the Cleveland Speedaire Fan-cooled Reduction Unit. The unit will be displayed in actual operation and in the background of the display, a cutaway section will show the unit as animated with polaroid light. The Speedaire is fan-cooled and represents the latest improvement in design of continuous worm gears. The Farval Corporation will feature the Farval Valve. A large plastic valve will be operated continuously to show its principle and construction. These valves are designed for application in the field of centralized lubrication. This hydraulic, pressure-operated valve has only two moving parts and contains no springs, no check valves and is individually adjustable. The valve will be illuminated with "black light" and a fluorescent compound in the lubricant. There will also be on display the standard automatic pumping unit, the Farval Manual Pump, and standard Dualine valves, as well as the Multival system. *In charge—A. J. Jennings.*

• **COAL AGE**

Blowups of the cover of *Coal Age* and pages of editorial material which have appeared in the publication will feature the exhibit of this well-known magazine of the coal industry. *In charge—H. R. Mathias.*

• **COAL MINE EQUIPMENT SALES CO.**

No description received.

• **COFFING HOIST CO.**

Plans to exhibit their regular line of Safety-Pull ratchet lever hoists, Model "Y-C" spur gear hoists, Quik-Lift electric hoist and trolleys and in addition to this a new combination hoist jack, with the capacity ranging to two ton. A Midget Puller will also be shown—an unusually light hoist weighing only 7 lb., with capacity ranging to 600 lb.

• **COLUMBIA STEEL CO.**

(See U. S. Steel Corp.)

• **COMBUSTION ENGINEERING CO., INC.**
Flash Dryer Division

No description received.

• **CUMMINS ENGINE CO., INC.**

Two Cummins diesel engines, representative of the models used in haulage and shovel applications in the coal mining industry, will be displayed.

The Model HB-600, one of the two engines to be shown, has been used since 1932 by both long-line on highway haulers and in off-highway service where the most severe operating conditions are encountered. The maximum rating of the HB-600 is 150 h.p. at 1,800 r.p.m. The other Cummins diesel engine to be shown at the exposition is the supercharged Model NHBS-600. This engine develops a maximum of 275 h.p. with an engine weight as low as 10.5 lb. per horsepower. This engine incorporated all of the basic features of the Series H diesel, and provides the power necessary to haul heavy loads over the rough-haul roads with steep grades that are typical of mining areas. The 64-page Cummins general catalog, as well as specification sheets covering the complete line of diesels, will be available for distribution at the convention.

• **D-A LUBRICANT CO., INC.**

No description received.

• **DEISTER CONCENTRATOR CO., THE**

The latest commercial model of the SuperDuty coal washing table, introduced at the 1940 Coal Show, will be shown in operation. The model will be one-fourth commercial size. The smaller machine reproduces the improved features of the standard size equipment and will be powered by a full size Concenco anti-friction head—self oiling and full enclosed motor. An operating Concenco Splash Proof 105 Feed Distributor will also be exhibited in full commercial size. This machine is primarily furnished to distribute feed equally between a number of coal-washing tables. Concenco spray nozzles in both the regular and heavy duty sizes will also be shown and descriptive matter covering other apparatus in the company's lines, including the Leahy heavy duty vibrating screen, will also be available. *In charge—D. N. Griffin.*

• **DEISTER MACHINE CO.**

A double deck Plat-O Vibrating Screen, size 4x10 ft., will be used for demonstration purposes. An additional attraction will be a pictorial exposition of the design, construction and operation of Deister's Plat-O coal washing table. A cutaway model of the table will also be shown in the booth. *In charge—Irwin F. Deister.*

• **DEMING CO., THE**

Pumping equipment that will feature this exhibit includes the following: self-priming pumps, vertical turbine pumps, horizontal centrifugal pumps, horizontal piston pumps, high pressure horizontal Triplex pumps. The new self-priming pumps can be operated without the use of any foot, check or flat valves in the pipe lines. These pumps are especially adaptable for mine gathering work. Vertical turbine pumps as exhibited are being used for mine gathering, with the motor above ground and the pumping unit extending through a bore hole into a sump in the mine. The "Oil-Rite" Single Acting Horizontal Triplex Pump for working pressures up to 800 lb. will also be shown. The Two Ball Bearing Side Suction Centrifugal Pump designed for extremely bad mine water will also be available for examination. *In charge—Wayne L. Brown.*

• **DETROIT DIESEL ENGINE DIVISION, GENERAL MOTORS CORP.**

The feature of the exhibit will be a new "Twin-6" industrial power unit having individual clutches and individual and synchronized throttle controls. This multiple unit with engines mounted side by side and driving a single shaft can be adapted to any side load or direct connected application within the proper horse-power range. Three other model engines will also be exhibited and also a three-cylinder operating cutaway engine demonstrating the function of all internal moving parts. An injector popping exhibit will also show the unit fuel injection principle featured in General Motors diesel engines. *In charge—E. F. Bentley.*

• **DIFFERENTIAL STEEL CAR CO.**

Expects to exhibit the following: a large capacity mine car together with some of the component parts, enlarged photographs of mine locomotives, mantrip cars, larries, etc., also motion pictures. *In charge—R. D. Flowers.*

• **DOW CORNING CORP.**

This exhibit will be built around the use of Silicone insulation. The exhibit pieces will demonstrate the heat, moisture, arc and flame resistant qualities of this new class of electrical insulation in motors, generators, transformers, coils and switches. Silicone fluids, oils and greases, insulating varnishes and resins for electric machines, bonding and protective coating resins, and Silicone rubber are all new materials which will be shown. Exceptional heat resistance is claimed for Silicone paint and Silastic, the Dow Corning Silicone rubber. *In charge—Clayton Doremire.*

• **DUFF-NORTON MANUFACTURING CO., THE**

A special background will be used featuring pictures of Duff-Norton Jacks at work in the mine and simulating mining conditions with actual exhibit jack models. Jacks exhibited will be in three basic groups: first, the standard Duff-Norton Automatic Lowering Jack used in mines as part of cutting and loading equipment and an electrically operated exhibit model of 514-MT Jack will be shown. Secondly, Mine Roof Jacks will be exhibited in detail and will include the standard MR-8 and MR-16 Mine Roof Jacks and the MR-80 and MR-160 as well. The use of aluminum tubing in Mine Roof Jacks will also be displayed and a new development in Pin Timbering which is just being announced. Third, the General Utility Jacks for use in tipples and above the ground operations will be shown including the new line of Hy-Power Hydraulic Jacks, a Pinion Puller and the standard Journal Jack and large sizes of the Automatic Lowering Jacks. *In charge—Dale Christopher.*

• **DU PONT DE NEMOURS & COMPANY, INC., E. I.**

The most prominent duPont aids to coal mining will be displayed, including "Nitramon"—a blasting agent designed for strip mining, as well as the new duPont Blasting Timer. Other products included are: Two permissibles, "Monobel" AA and "Lump Coal" C, "Ventube" rubberized ventilating tubing and electric blasting caps. Part of the booth will also be devoted to the latest products of duPont research representing all departments of the company. *In charge—R. C. Sickler.*

• **EDISON, INC., THOMAS A.**
Storage Battery Div.

This exhibit will be a wall section with a headboard consisting in part of an enlarged portrait and signature of Mr. Thomas A. Edison together with the word Edison in cut-out block letters. The wall section is equipped with shelves on which will be displayed several nickel-iron-alkaline cells of the type used to make up shuttle-car and mine-locomotive batteries. A large framed panel will display enlarged photos of a typical Edison nickel-iron-alkaline shuttle-car battery and mine locomotive battery with a list of advantages inherent in this type of cell. *In charge—W. W. Gould.*

• **ELECTRIC CONTROLLER & MFG. CO., THE**

Line-Arc Repeating Sectionalizers, Slate Disposal Tramway Controllers and Type WB magnetically-operated brakes for use on A.C. and D.C. currents will be featured at the exhibit. In addition to equipment, large mural photographs of separator magnets, automatic control for rotary-type substations will also be on display. The slate disposal controller to be exhibited will be of frequency relay type with six-speed-point master switch for control of the wound-rotor motor driving the tramway. Frequency relays used on this controller operate directly from the rotor circuit in providing automatic control of the plugging and accelerating functions of the motor. *In charge—R. M. Phillips.*

• **ELECTRIC RAILWAY EQUIPMENT CO., THE**

This exhibit will concentrate on various types of electrical distribution boxes. Equipment such as the Elreco No. 1228 Junction Box for D.C. circuit will be shown. Standard equipment includes 200, 100 and 35 ampere 250-volt enclosed fuses—solder type terminal connections which eliminates the necessity of vulcanizing or splicing of cables. *In charge—A. L. Johnston.*

• **ELECTRIC RAILWAY IMPROVEMENT CO., THE**

Will exhibit arc weld, copper weld and gas weld rail bonds. Portable welding rheostats and accessories for use in rail bonding and general welding work will also be shown. *In charge—N. G. Carlson.*

• **ELECTRIC STORAGE BATTERY CO., THE**

Will feature cutaway and exhibit cells of Exide-Ironclad storage batteries as used in the mining industry. A background display will consist of giant murals of the Exide manufacturing plants and a turn-table featuring one cell of the latest type Exide motive power battery. *In charge—William Van C. Brandt.*

• **ELLIOTT SERVICE CO.**

No description received.

• **ENTERPRISE WHEEL & CAR CORP.**

Expect to exhibit a modern four-axle (or stub axle) steel mine car. *In charge—W. E. Meyer.*

• **EUCLID ROAD MACHINERY CO., THE**

Three haulage units ranging in payload capacity from 15 to 40 tons will be displayed. Two models will be shown: a rear-dump type as used for hauling coal, overburden and gob (a 15-ton unit with 150 h.p. diesel engine), and the other a 22-ton model which is available with engines of 200 to 275 h.p. rating. The tractor and semi-trailer unit will also be displayed.

• **FAIRMONT MACHINERY CO.**
United Engineers & Constructors, Inc.

Enlarged photographs of plants which this firm has recently constructed will feature their exhibit. Comfortable furniture will be installed to take care of patrons. *In charge—Leonard Sargent.*

• **FARMERS ENGINEERING & MANUFACTURING CO.**

The Femco Trolleyphone will be on display at this booth. This trolleyphone, when installed in a mine, provides communication between a central point, such as a dispatcher's office and mine locomotive. Unlike telephones which are installed at fixed points, the Femco Trolleyphone provides contact not only from motors to the dispatcher, but also between motors whether they are standing or moving. Power for operating the equipment is taken from

the trolley wire which can be either 250 or 550 volts D.C., whichever is used in the mine. The system operates through the use of frequency modulated carrier current and a special squelch circuit developed for this equipment keeps noise from coming out of a speaker until the receiver is engaged by someone operating a microphone button. Also on display will be a multiple shot-firing device for setting off charges in the mine. *In charge—N. F. Agnew and W. P. Place.*

• **FARVAL CORP.**

(See Cleveland Worm & Gear Co.)

• **FISKE BROTHERS REFINING CO.**

This exhibit will feature the action of Lubriplate lubricant under adverse conditions such as contact with water. One piece of moving equipment will consist of a gear case with section removed demonstrating lubrication of moving gears. A series of enlarged photographs showing Lubriplate at work will be shown, also a display of various types and sizes of containers for shipping the product. *In charge—J. M. Stretchbery.*

• **FLETCHER & CO., J. H.**

(See Baker-Raulang Company.)

• **FLOOD CITY BRASS & ELECTRIC CO.**

The feature of this exhibit will be CS-1 Car Spotting Hoist. The display will be spot lighted by Flood City headlights, an item developed during the past year. A new mercury contact headlight switch, at present being developed for use with the headlight, will also be on exhibit. Individual items from the regular production of trolley line material, replacement parts and maintenance specialties and a heavy duty trolley wheel will also be shown. A new design for a safety switch for coal mine pumps, hoists, etc., is also being developed by this company and it is planned to have three different designs on display. From suggestions secured at the exposition it is hoped to consolidate these into one standing product. *In charge—Howard Hughes.*

• **FULTON BAG & COTTON MILLS**

Will feature FFFF Brattice Cloth. It is planned to have an outline map of the United States showing the coal fields in shaded areas and giving the names and locations of the various distributors carrying stocks of Brattice Cloth. *In charge—E. Monroe Hornsby.*

• **FYR-FYTER CO., THE**

Intends to exhibit a complete line of Fyr-Fyter extinguishers. In addition it is planned to show a Karbaloy mine chemical engine if one is available. If not, a large photograph of the mine engine will be used. *In charge—George R. Hewitt.*

• **GARDNER-DENVER CO.**

Plans to display their new Model GD14 mine car loader, which is the latest addition to their line of underground loading machines. There will also be a complete display of rock drilling equipment together with representative models of air hoists, air motors, air compressors and centrifugal pumps. *In charge—W. E. Shaughnessy.*

• **GATES RUBBER CO.**

No description received.

• **GENERAL ELECTRIC CO.**

Will exhibit "heat beating" Deltabeston wires and cables. This line includes a magnet wire or a cable for practically all types of mining equipment or application where electrical current is required and where operation is severe. *In charge—W. S. Hay.*

• **GOODMAN MANUFACTURING CO.**

A variety of mining equipment will be featured and demonstrated. Included in the list are: a new Goodman Power Duckbill, a hydraulically controlled Type 512 Shortwall fitted with bugduster, a hydraulically controlled Type 712 top-cutting Shortwall, mounted on jacks, permitting an adjustable cutting range. There will also be displayed a 15-ton haulage locomotive, Type 165-A-O-4-C, designed and built for a large scale operation. The head, drive and foot sections of a standard 30-in. Belt Conveyor will also be shown with an intermediate section of a 995 Conveyor for 36-in. or wider belts. The Type 460 permissible Track Loader will also be at the booth. *In charge—John D. James.*

• **GORMAN-RUPP CO.**

Self-priming centrifugal mine-gathering pumps will feature this exhibit. Five models are to be shown ranging in size from 1½-in. to 3-in. suction and discharge. A visible pumping action display will feature the exhibit with a cutaway pump being served by lucite suction and discharge lines. *In charge—Gilmore Hiett.*

• **GOULD STORAGE BATTERY CORP.**

Cutaway cells showing battery construction will feature the Gould's display. Actual batteries will also be available of the type used in mining operations. *In charge—H. S. Carlsen.*

• **GULF OIL CORP.**

The Gulf exhibit will contain several animated demonstrations of the company's line of quality lubricants for mine use. By means of models of actual equipment, the application of specialized lubricants will be shown.

• **GUYAN MACHINERY CO.**

The display of this company will feature a new low vein type Bondwelder and Sealed Beam Lamps with power unit. In addition there will be displays of: locomotive resistors, mining machine resistors, sealed beam headlights, choke starters, footvalve strainer, low vein bond welder, standard bond welder, Pumotor starter, "Venta-Mine" fan. *In charge—Homer V. DeJournett.*

• **HARDSOCG MACHINE CO.**

(See Cardox Corporation.)

• **HARNISCHFEGER CORP.**

Working model of the Magnetorque unit will be on display at the Harnischfeger booth. This unit will be in model form with appropriate controls so that visitors can operate the machine for themselves.

• **HENDRICK MFG. CO.**

Samples and pictures of the many Hendrick products available for the coal market will be on display. Short slot lip screens used for the de-watering of coal will be shown and in addition a small model of the Hendrick Shaking Screen will be available for demonstration. Literature and samples will also be available.

• **HERCULES POWDER CO.**

No description received.

• **HEWITT-ROBINS INC.**

Robins Conveyors Division

This display will feature two units in operation; one a full-size Eliptex dewatering screen, especially designed to remove a high percentage of surface moisture from coal in sizes down to and including minus ⅛ in.; the other is the Robins Mine Conveyor which will be on exhibit in operation—but in condensed form. The unit will comprise one of each type of section; head, drive, internal takeup, intermediate (10-ft. and 8-ft. lengths), special 4-ft. deck section and tail takeup.

• **HOLMES & BROS., INC., ROBERT**

No description received.

• **HULBERT OIL & GREASE CO.**

Will have on display a full line of their products as used in coal mines. *In charge—E. W. Wanner.*

• **HUMPHREYS INVESTMENT CO., THE**

A full-size Humphreys Spiral Concentrator operating with minus ¼-in. to 0 coal as feed will be shown. The spiral is the same model in use in a full size plant consisting of 36 first-stage and 12 second-stage or scavenger spirals for cleaning approximately 50 tons of anthracite silt per hour to produce colliery fuel. *In charge—Whitman E. Brown.*

• **INDEPENDENT PNEUMATIC TOOL CO.**

The manufacturers of Thor portable power tools will introduce a new line of stoper rock drills and will release information on a new wagon drill soon to be put into production. The complete line of Thor mining and equipment maintenance tools will also be shown as well as three new models of light, medium and heavy duty Thor stopers.

• **IRWIN FOUNDRY & MINE CAR CO.**

Featuring this display will be an eight-wheel mine car. This car will be one of 300 that has been in service for 16 months at Springdale Mine of the Allegheny-Pittsburgh Coal Company. The car is of all-welded construction and is 17-ft. 8-in. overall in length, 6-ft. wide and 46-in. above the rail. It has a water level capacity of 262-cu. ft.—approximately 8 tons. A truck will also be exhibited showing king pin section and the truck mounting through the body. *In charge—Gray F. Sensenich.*

• **I-T-E CIRCUIT BREAKER CO.**

Will feature the I-T-E type KSA and KSC automatic reclosing circuit breakers designed for D.C. power sectionalizing in mining service. The booth background will be an enlarged layout of a modern mine, superimposed with electrical distribution circuit layout showing functional location of protective devices.

• **JEFFREY MANUFACTURING CO., THE**

Equipment to be exhibited is as follows: electric vibrating grizzly feeder, single roll crusher, Two-stage Aerodyne mine fans, 43-L Cutter Loader, miscellaneous renewal parts—controllers, coils, resistance, gears, trolley wheels, etc.—miscellaneous tipple machinery replacement parts—chains, sprocket, belt idlers, bearings, etc.

In addition to the above, new equipment will also be shown including the following: 56-A Drilling Machine, 35-DX Coal Cutter, 61-CLR Conveyor-Loader, 64-A Belt Conveyor, shuttle car, mechanical vibrating screen. *In charge—J. H. Fulford.*

• **JOHNSON-MARCH CORP., THE**

The chief materials to be shown at this exhibit will be a new product just developed known as the Compound M Cartridge, and the unit for proportioning this cartridge known as the C. T. Automatic Flow Proportioning Unit. Compound M is a solidified, concentrated "wetting" compound that dissolves automatically. The equipment and chemical will be shown in detail and it is planned to have one of the units in actual operation with the water flowing through to show the proportioning method and the automatic operation. There will also be displays of other chemicals of interest to the mining industry. *In charge—George A. Mau.*

• **JOYCE-CRIDLAND CO., THE**

Jacks manufactured by this company will feature the display. A 5-ton Model No. 67-A automatic lowering jack for use on cutters, loaders and track work will be shown and also a 10-ton Model No. 76-A automatic lowering jack. These jacks are built without using machine screws, and working parts are enclosed and protected from dirt. Lightness is obtained by using a nickel chrome steel rack bar, and large barrel type operating springs are plated to make them resistant to rust.

• **JOY MANUFACTURING CO.**

Will show a complete line of trackless mining machinery. Included in the display will be a Sullivan trackless coal cutter, a Sullivan trackless coal drill, caterpillar-mounted Joy loaders, shuttle cars, a new Joy trackless timber setter, trackless auxiliary mining machinery including a mining machine truck and post puller; and sections of La-Del belt, chain and shaker conveyors. Items will also be included that are not specifically designed for trackless mining; such as conventional Sullivan short-walls with the new Sullivan bugduster and a new coal cutter bit; a La-Del Axivane mine fan; a La-Del Axivane portable blower; a Sullivan air compressor; Sullivan rock drills; and a new Sullivan car puller. *In charge—R. A. Campbell.*

• **KENNAMETAL INC.**

This display will feature actual and average speed at which tungsten carbide tools are cutting and drilling in different seams of coal and the amount of power the tools are consuming. In connection with Kennametal's new product, the tungsten carbide percussion bit, footages, speed and substances the bit has drilled will be shown and the comparative number of steel bits that would have been required to drill the same footage. *In charge—Richard L. Farris.*

• **KENSINGTON STEEL CO.**

Colored pictures on a suitable background will feature the display of the Kensington Steel Company. One large picture of a preparation plant and another of a stripping shovel in operation will be used as panels. It is also planned to have movies showing drag line operation. *In charge—Ed C. Anderson.*

• **KOEHLER MANUFACTURING CO.**

Will exhibit a complete constant potential lamp charging system featuring self service. This will consist of a 50-lamp rack, motor watchman switch, mercury relay and generator. Other equipment will be a motor generator for C.P. charging; aluminum Koehler flame safety lamps; G. W. Wheat lamps; steel Koehler flame safety lamps; G. Q. Wheat lamps; No. 700 Bench type magnets for lamps; Deluxe Wheat Rechargeable Spotlight; Holmested car stops; anemometers and miners' belts. New equipment to be shown will be: Headpiece shot-firing units, improved Holmested car stops, new type Wheat safety hand lamp, and Koehler testing cabinet (5 units). *In charge—R. A. Lambie.*

• **LEE-NORSE CO.**

Two of the latest "Mine Jeep" models will be exhibited at the Lee-Norse booth. One of these is developed for low coal and is arranged for standard trolley operation with a height of only 20-in. above the top of the rail. The other "Mine Jeep" to be exhibited is for medium high coal and has a special arrangement of a combination trolley and battery operation. *In charge—E. M. Arentzen.*

• **LESCHEN & SONS ROPE CO., A.**

The object of the exhibit will be to provide information on wire rope and the display is designed in an attractive and interesting manner. Numerous samples of various types and construction of wire rope used in the coal industry will be shown. These will be in short length so as to permit easy examination and comparison. The decorative part of the exhibit will be a large revolving reel of "Hercules" red strand wire rope, especially illuminated. *In charge—W. C. Richards.*

• LE TOURNEAU, INC., R. G.

Featured will be the new high-speed Tournadozer. Riding on four large rubber tires, the Tournadozer is the first machine of its kind to make its appearance in the industry. The Model C (the rig to be displayed) is powered by a 180 h. p. diesel engine; has four speeds forward and travels up to 13 m.p.h. The high-speed Tournadozer has the same four speeds in reverse giving it great advantage on work requiring much backing and maneuvering. Along with the display, a background will feature large colored murals showing job application views of this new rig. In the center section of the background is a motion picture screen on which will be projected actual job scenes showing the Tournadozer in action.

• LINCOLN ENGINEERING CO.

Will display Centralized Lubricating Equipment adapted to coal mines and tipples, shaker screens, coal loaders, conveyors and other supporting equipment. Also on display will be a full line of heavy duty drum pumps, high pressure and volume bucket pumps, Kleenseal hand guns, Kleenseal and button head grease fittings, high pressure and volume grease hoses and control valves, air coupler, air hose couplings and other airline and lubricating accessories. *In charge—Al. Woodland.*

• LINK-BELT CO.

Two operating units will be on display: the new Link-Belt concentric-action vibrating screen, and the Multi-Louvre heat dryer. The exhibit will also cover the complete line of Link-Belt coal handling and preparation equipment, mechanical power transmission machinery and Link-Belt Speeder Corp. shovels, cranes and draglines. Motion pictures will also be shown of draglines and the heavy media coal cleaning process.

• LINK-BELT SPEEDER CORP.

(See Link-Belt Co.)

• McLANAHAN & STONE CORP.

Will display one of their line of coal crushers.

• McNALLY-PITTSBURG MFG. CORP.

No description received.

• MACK-INTERNATIONAL MOTOR TRUCK CORP.

Motor trucks designed solely for off-highway service, together with separate action displays of some of their component parts constitute the exhibit of Mack Trucks, Inc. The two vehicles included are both of 15-ton capacity: Model LR, a large four-wheeler and Model LMSWM, a six-wheeler. The former is a newcomer to industry, having been active in mining, quarrying and coal operations for only a little over a year; but the six-wheeler has several years of widespread use in these and other off-highway services to its credit. Among the components also included in the Mack exhibit are the balanced bogie, forming the four-wheel rear drive of the six-wheeler and the Mack Planidrive rear axle used on the LR. The latter features outboard planetary drive to the rear wheels and suspension of the frame through four rubber shock insulators in the place of springs. Other items included are the eight-speed constant-mesh Duplex transmission used in the four-wheeler—the largest of the trucks' transmissions designed for this model. *In charge —A. R. Stephan.*

• MACWHYTE COMPANY.

Will display preformed and non-preformed internally lubricated wire rope designed for mining equipment. The display will also show the location of stocks maintained throughout the United States in principal mining fields for immediate servicing for shaft, slope and open-pit mining machinery equipment. *In charge—Forest J. Nelson.*

• MARION POWER SHOVEL CO.

Will feature display showing a coal strip mining scene and featuring the various pieces of equipment required for this work. The stripping shovel to be shown is equipped with a 40-cu. yd. dipper, and the display will be illuminated to bring out the high lights not only of the shovel equipment, but of the entire job. *In charge—L. C. Mosley.*

• MARLOW PUMPS

The exhibit will include three Marlow self-priming centrifugal pumps, two electric and one gasoline powered. Another feature of the exhibit will be an illuminated cutaway of a Marlow Model 12. This model will have its interior parts in motion and will show clearly the operation of this type of self-priming pump. *In charge—Richard M. Fraser.*

• MARTINDALE ELECTRIC CO., THE

This display will include motor maintenance and mechanical maintenance equipment, electrical testing instruments and safety equipment. It is planned to have demonstrations at all times in the booth. *In charge—William N. Osbun, Jr.*

• MECHANIZATION, INC.

This exhibit will feature a presentation of the two publications, *Mechanization* and the *Mech Annual. In charge—George C. Lindsay.*

• MINE SAFETY APPLIANCES CO.

Will exhibit a number of new and improved products for mine safety and more effective maintenance. Included will be the new U. S. Bureau of Mines-approved Chemox self-generating oxygen breathing apparatus for mine rescue and recovery work; M. S. A. Bantam high-pressure rock dust distributor; the new U. S. Bureau of Mines-approved Dustfoe respirator with combination aluminum facepiece and plastic filter container; the M. S. A. Comfo respirator, also U. S. Bureau of Mines-approved, with newly designed facepiece; Velocity power rail punch and cable splicer; and the Redi-Heat Block. There will also be shown the Edison electric cap lamps and charging racks, Comfo caps, Skullgards and methane detectors.

• MINES EQUIPMENT CO.

Will show among other items a miniature mine power distribution system. This system is composed of modern protective equipment (including Safety Ground Trip feature) connectors, cables, etc. It is designed and coordinated to deliver power from a power feeder in the entry to such equipment as is required to mine coal or metal. It can be applied to either gaseous or non-gaseous mines. Connectors for many applications, with the waterseal and made of molded rubber will also be on display. A String-A-Lite, a combination of connectors, "molded in" lamp receptacles with guards on cords will also be shown. *In charge—R. Gehlsen.*

• MINING CONGRESS JOURNAL

The display will feature coal publication material from the JOURNAL and the *Coal Mine Modernization Year Book* published by the American Mining Congress—a fully illustrated record of the meeting with complete coverage of all papers presented at the sessions. An attractive lounge will be available where the many friends of the organization can rest and visit.

• MINING MACHINE PARTS, INC.

This organization has specialized in the manufacturing of longer lived replacement parts for lower cost operation of underground mechanical coal loading equipment. The display will feature the design and quality incorporated in the manufacturing of this equipment. *In charge—W. P. Bigler.*

• **MINING SAFETY DEVICE CO., THE**

Will show models of mine car dumping and control equipment. *In charge—C. L. Muntz.*

• **MOSEBACH ELECTRIC & SUPPLY CO.**

Will feature their combination joint and cross bond, known as the M8-XF, which takes the place of a mine weld and makes reinforced network of conductors through both rails. Also shown will be the mercury tube headlight switch complete with resistor and holder. Other types of switches and bonds will also be shown with a combination trolley and feeder switch; jumbo feeder switches and large amper rib switches, trolley switches; trolley frogs; trolley splicers; trolley wheels; pole heads and harps; glider pole heads; voltage and bond testers. *In charge—John C. Loy.*

• **MYERS-WHALEY CO., INC.**

This company will show their new "Automat" with optional location of controls, forward or back, two-speed tramming, automatic lubrication and hydraulic brakes. The vertical action shovel is equipped with a parallel lift rear conveyor to take full advantage of all height available.

• **NATIONAL ELECTRIC COIL CO.**

The feature attraction of this display will be an exhibition of a braiding machine on which will be fabricated Fiberglas sleeving. Most mine electricians have used coils employing this sleeving as a part of the insulation material but have never had an opportunity of observing how this material is made. Also on display will be improved insulating materials, motor field frames rebuilt to engineering standard and electrical rewindings. *In charge—J. H. Chevalier.*

• **NATIONAL MALLEABLE AND STEEL CASTINGS CO.**

The theme of this company's exhibit relates to mine car components. The central attraction will be various assemblies of Willison Automatic Couplers, including spring-type and friction-type draft gear applications. These couplers will illustrate the self-centering feature and demonstrate designs which permit dumping of cars on rotary dumps. Also displayed will be various types and sizes of light, strong Naco steel car wheels and a variety of plain and swivel hitchings together with other special hauling devices. *In charge—Herbert H. Smith.*

• **NATIONAL TUBE CO.**

(See U. S. Steel Corp.)

• **NORTHWEST ENGINEERING CO.**

No description received.

• **OHIO BRASS CO.**

Featuring a coordinated power distribution system, the Ohio Brass exhibit will show power handling materials for use from substation to face. Among the equipment on display will be a number of safety and control devices including: the Types LG (permissible) and M (open-type) multiple interlocking distribution boxes, the Types BDG (gas-proof) and BD (open-type) automatic motor starters, the Type FG permissible splice box, Mechano plugs, fused trolley taps and Plier-Type ground clamps. One feature of the exhibit will be a "roofed area" from which various O-B smooth-underrun trolley overhead and feeder materials will be suspended under conditions simulating actual installation in the mine. A sizable portion of the exhibit will be devoted to the O-B Automatic Mine Car Coupler. The Form-8 coupler will also be demonstrated to show operating features. *In charge—J. H. Sanford.*

• **OHIO CARBON CO., THE**

This exhibit will be made up of powders, plates, brushes, resistors, burnishing tools and other carbon specialties. Powders that are used to produce motor brushes, copper powder, copper flakes, graphite, lead, tin and many others will also be shown. There will be a complete display of motor brushes, insulated and wire wound resistors, a new resistor material for use in oil and a line of burnishing tools designed for cleaning commutators.

• **OKONITE CO.**

Hazard Insulated Wire Works Division

The exhibit of the Hazard Insulated Wire Works Division of the Okonite Company will show many of the different types of electrical wires and cables manufactured for mining use. Samples and enlarged photographs will illustrate the various designs and their applications. Particular emphasis will be laid upon the flame-resistant cables required by the Bureau of Mines, Commonwealth of Pennsylvania. Test apparatus used in the Pennsylvania Bureau of Mines' flame test will be exhibited together with samples showing actual test results. Included in the Hazard exhibit will be power cables for shaft or borehole use, inside distribution cables with fungus-resistant Spiralweave covering, shot firing cord, Hazacord trailing cables protected with Hazaprene sheaths and both Okoprene and Hazaprene protected electric shovel cables. *In charge—Richard S. Hayes.*

• **OSMOSE WOOD PRESERVING CO. OF AMERICA, INC.**

Treated mine timbers and ties will feature this display. There will also be a scale model of an Osmose "moisture conditioning" timber-treating plant. Samples of tested Osmose treated wood from a variety of fields will be shown. Tests showing penetration will also be made on the spot and samples of the various wood preservatives manufactured by the company will be on display, together with descriptions of the uses and applications for each. *In charge—Joseph M. Bray.*

• **OWENS CORNING FIBERGLAS CORP.**

This exhibit will include the line of standard Fiberglas electrical insulation materials, and will be featured by graphic displays spotlighting the basic characteristics of the materials which enable them to stand up under severe operating conditions. One of the displays will consist of a motor-generator set with control panel, wired and operated to show the temperatures in the Fiberglas-insulated motor under various load conditions. The motor will be overloaded and the per cent of overload and the operating temperature will be shown on a panel.

Another display will show special-type fractional DC motors Fiberglas-insulated to withstand a severe duty cycle and to produce a maximum power within the space and weight limitations. A Fiberglas high-temperature textiles display will show a heating element insulated with Fiberglas high-temperature sleeving. Temperature of the heating element and sleeving will be raised to the point of incandescent glow. *In charge—M. P. Claytor.*

• **PAGE ENGINEERING CO.**

A completely fitted "RH" Automatic Dragline Bucket will be on display at this booth. The bucket is especially designed for mine stripping and the handling of blasted rock and excavating hardpan of highly abrasive materials. Kodachrome motion pictures of the Automatic Dragline Bucket and the Page Walking Dragline will be shown in the booth in the afternoons. Booklets will also be available describing details on the operation and maintenance of the bucket. *In charge—Robert W. Baker.*

• **PARIS MANUFACTURING CO.**

Plans to exhibit three types Parmanco Drills. A hand feed vertical drill, a power feed vertical drill and a power feed horizontal drill with power traction. All machines will be in operation and literature will be available describing the equipment. *In charge—Alan J. Parrish.*

• **PEDA SPRAY CO., INC.**

Will have its Peda Spray Dispenser in operation. This dispenser holds 3½ gallons of a specially-compounded so-

lution for prophylaxis of athlete's foot. The dispenser is completely self-contained and is operated by the weight of the user. *In charge—M. J. Bakken.*

• **PENN MACHINE CO.**

Plan to exhibit new types of gears, pinions and other replacement parts, and the Super-Weld line of rail bonds. *In charge—S. Guy Little.*

• **PENNSYLVANIA ELECTRIC COIL CORP.**

This company does not intend to display a large variety of items but will have on hand samples of armature and stator coils; the booth decoration will be a standard background with the trade mark enlarged and artistically colored. Chairs and settees will be arranged to accommodate at least a dozen people. In charge—*Kenneth Green.*

• **PHILCO CORP.**
Storage Battery Div.

An X-Ray illusion will demonstrate the internal construction of the Philco "Thirty" type XL-P 13 shuttle car batteries. Unretouched photographs will reveal the condition of a Philco "Thirty" battery which has been in service in the field for almost eight years. The new AMH-P 31 for power tanks will be on display, as well as a cutaway cell section of a 3 AMA 25 for mine locomotive batteries. A Philco radio-phonograph Model 1203 will be awarded Thursday noon to the winner in a contest conducted at the booth. Toy train enthusiasts, too, will have opportunity to indulge in their hobby—at the Philco booth, gathering cars in the mine, bringing them to the tipple, and respotting them at the face again.

• **PITTSBURGH GEAR & MACHINE CO.**

This exhibit will show a complete line of various sizes of gears, pinions, shafts and parts manufactured for equipment used in coal mines. A new type of armature shaft will also be shown in which the pinion is held in place by means of a tapered serration instead of the standard key and keyway.

• **PORTABLE PRODUCTS CORP.**

Will demonstrate its line of transition rails, compromise bars, skids, derailers, switch signals and other items of track equipment as used in the mining industry. The Terrier Mixer and Extruder, commonly known as the "Dummy-Maker," will also be in action. This device manufactures clay tamping for shot holes at the mine, using carbonaceous shales, weathered gob, clays or other material available locally. This method uses no paper or other covering over stick tamping. Safety belts for pole climbers, car droppers, shaft and headhouse repairman will also be on display. *In charge—George C. Nelms and Sid Gane.*

• **POST-GLOVER ELECTRIC COMPANY, THE**

Will show P-G steel grid resistors, grid starters, heaters, automatic transfer switches and similar products.

• **PRODUCTIVE EQUIPMENT CORP.**

Will show in photographs the Selectro and Gyroset vibrating screens. The pictures will cover both the machine and installations. In addition, it is planned to have on exhibit one of the Selectro screens for inspection.

• **PROX CO., INC., FRANK**

No description received.

• **PURE OIL CO., THE**

No description available. *In charge—E. S. Miller.*

• **RAYBESTOS-MANHATTAN, INC.**
Manhattan Rubber Div.

The new Homocord Conveyor Belt will be explained at the booth. This belt has a special construction feature designed exclusively for conveyor belt use. Other Manhattan products to be explained will be: The Buronik Trolley Wire Guard—a patented synthetic, flexible, Flexlastic skirt-covering, designed to provide full protection from exposed wires. Condor Homoflex Suction Hose —which is constructed without wire for safety. Rubber lined mine pipe and fittings—designed to provide corrosion protection from acid mine water and solids. Condor Whipcord endless belts, V-belts and a treated type of fire hose. *In charge—John B. Anderson.*

• **RELIANCE ELECTRIC & ENGINEERING CO.**

No description received.

• **ROBERTS AND SCHAEFER CO.**

Will exhibit a complete and full size installation of their principal coal-cleaning units and will give coal operators their first view of the new R & S Super-Air-Flow pneumatic coal cleaner. This is a refined and improved model of the well-known Stump Air Flow and incorporates the original patented features plus additional mechanism to improve its efficiency in the finer sizes. All R & S units, including the hydro-separator, hydrotator and hydrotator classifier will be in partial mechanical operation to illustrate the functions of the various parts. Photographs and views of typical installations will be on display. *In charge—William C. McCulloch.*

• **ROEBLING'S SONS CO., JOHN A.**

No description received.

• **ROME CABLE CORP.**

Emphasis at this exhibit will be placed on the Rome 60 line of Neoprene sheathed mining machine cables. Attention will be directed toward the safety characteristics of these cables as indicated by flame tests and prescribed by Federal and State of Pennsylvania Safety Codes. The salient features of this flame test will be presented pictorially. *In charge—R. A. Gray* and *C. B. Llewellyn.*

• **SAFETY FIRST SUPPLY CO.**

Will exhibit the following equipment: new self-contained breathing apparatus approved by the Bureau of Mines, new E. & J. resuscitator, inhalator, and aspirator to revive one, two or three patients at the same time, new Airlined safety hats and caps, new Air Line respirator, new plastic goggles, safety belts, safety-walk non-slip flooring. *In charge—R. A. Phillips.*

• **SALEM TOOL CO., THE**

A self-propelled type of McCarthy Rock Boring Machine will be displayed. This machine is used primarily in strip mining for drilling horizontal holes from 4 in. to 12 in. in diameter to depths of 30 to 150 ft. The McCarthy Drill on display will be a standard self-propelled model, ready to operate under full power. *In charge—V. J. McCarthy.*

• **SANFORD-DAY IRON WORKS, INC.**

Will exhibit an automatic drop-bottom mine car of 9-ton capacity equipped with air brakes and superstructure designed for continuous loading from belt conveyors with no interruption in the discharge of coal from the conveyor until the entire trip of cars has been loaded. In addition there will be exhibited a low height automatic drop-bottom car for hand loading. *In charge—George E. Jones.*

• **SCOTT AVIATION CORP.**

The Safety Equipment Division of this corporation will exhibit the Bureau of Mines-approved Scott-Air-Pak. This self-contained breathing apparatus was first introduced one and a half years ago. The Air-Pak uses pure air as a respiratory agent rather than oxygen as air is less flammable and less explosive. The Air-Pak uses high

pressure compressed breathing air carried in low weight I. C. C. approved cylinders in a comfortable back pack of aluminum sheet and rubber-dipped webbing. The air is not re-breathed but exhaled through diaphragm-type exhalation valve which also permits conversation. *In charge—Earle M. Scott.*

• **SHELL OIL CO., INC.**

No description received.

• **SIMPLEX WIRE & CABLE CO.**

Will have on display samples of their complete line of insulated wires and cables which can be used in coal mines. These will include—Simplex-Tirex portable cords and cables, Simplex-Anhydrex and Simplex-Anhydroprene underground cables, together with Simplex-Plastex insulated cables. The latter type are plastic insulated. *In charge—E. J. MacKenzie.*

• **SIMPLICITY ENGINEERING CO.**

Will be exhibiting one 4 x 12-ft. Model "D" three-deck machine, a screen unit which operates on sizing three grades of coal. *In charge—J. S. Powlison.*

• **SKF INDUSTRIES, INC.**

This display will consist of a range of ball and roller bearings as applied to the coal industry.

• **SNAP-ON TOOLS CORP.**

Will show a complete line of hand and power tools for mine maintenance and repair work. Featured will be a matched set of gear pullers designed to solve pulling problems encountered in mining. Other tools exhibited will be large and small ratchet wrenches, the largest of which is the No. 78 Jumbo heavy duty industrial ratches which is 40 in. long; the smallest the GM-70-M Midget ratchet which is only slightly over 4 in. in length. *In charge—D. A. Cook.*

• **SOCONY-VACUUM OIL CO., INC.**

No description received.

• **SPRAGUE & HENWOOD, INC.**

No description received.

• **STANDARD OIL CO. (INDIANA)**

No description received.

• **STANDARD OIL COMPANY OF OHIO, THE**

Will have a standard back wall display with suitable neon signs, and products recommended for use by the coal mining industry. Engineers will be on hand to discuss all phases of lubrication.

• **STERLING STEEL CASTING CO.**

This exhibit will consist mainly of Sterling Cast Steel mine car wheels. A balancing machine will be available to demonstrate to coal operators the advantages of a perfectly balanced mine car wheel over an unbalanced one. A number of miscellaneous cast steel castings to be used on mine cars will also be displayed and other coal mining equipment. *In charge—F. E. Rhine.*

• **SYNTRON CO.**

Plans to display heavy tonnage vibratory feeder equipment including models designed as feeders to control the flow of coal to processing machinery and inspection belts. Special units designed as vibrating grizzlies will also be displayed as well as vibrating dewatering screens for coal dust and small models of feeding machinery for handling dusting materials and chemical reagents. Large and small vibrators for use on bunkers, bins and chutes to promote a free flow of material will also be shown and the action display will be a miniature model that shows the laboratory action of feeders and also how the vibrating action is used to accomplish elevating materials. *In charge—G. Dean Alvord.*

• **TALCOTT, INC., W. O. & M. W.**

Various types of belt fasteners will be displayed. These fasteners, designed for conveyors and transmission belts, will be shown with tests for breaking strength. *In charge—M. W. Talcott.*

• **TAMPING BAG CO.**

The display will feature Seal-Tite tamping bags. Various tests have been evolved to demonstrate their wet-strength and indicate how the chemically treated paper resists tearing when wet. Special attention has been paid to making the seams of the bag water resistant and a special plastic adhesive which is moisture proof will also be demonstrated with the tamping bag. *In charge—A. E. Pickard.*

• **TEMPLETON, KENLY & CO.**

Will exhibit samples of types of Simplex jacks used principally in coal-mining operations. A suitably illuminated background panel will set off the jacks which will be prominently displayed on stands built for this purpose. Bulletins will be distributed and qualified men in attendance will discuss the practical application of this equipment.

• **TENNESSEE COAL, IRON & RAILROAD CO.**

(See U. S. Steel Corp.)

• **TEXAS CO.**

No description received.

• **TIDE WATER ASSOCIATED OIL CO.**

No description received.

• **TIMKEN ROLLER BEARING CO.**

No description received.

• **TOOL STEEL GEAR & PINION CO.**

No description received.

• **TRACY CO., BERTRAND P.**

Company officials will be present to confer and visit with their many friends in the coal industry.

• **TYLER CO., THE W. S.**

Will feature a scale model of the Ty-Rock screen in action. There will also be a selection of Tyler standard screen scale testing sieves and a Ro-Tap testing sieve shaker. The Ro-Tap will be demonstrated to show its characteristic action. A large number of woven wire screens of many different types used in the coal industry will also be on display. *In charge—Harry F. Lawrence.*

• **UNION WIRE ROPE CORP.**

Will feature the new Tuffy mining machine rope, large stripper ropes and a new 3 x 19 slusher rope.

• **UNITED ENGINEERS & CONSTRUCTORS, INC.**

(See Fairmont Machinery Co.)

• **UNITED STATES BUREAU OF MINES**

This display will feature the work of the Fuel and Explosive Branch and the Health and Safety Branch of the Bureau of Mines. *In charge—H. J. Sloman.*

• **U. S. GEOLOGICAL SURVEY**

This display will feature five items of interest to coal mining. First, a new coal map of the United States, which has just been printed and represents the latest coal information available on a national scale. Secondly, there will be a display designed to indicate the nature of coal investigations by localities, now under way by the U. S. G. S. Thirdly, there will be information on a new com-

plete bibliography of the U. S. G. S. coal publications. This is the first time that an annotated bibliography has been available on the Geological Survey's work in coal. Fourth, there will be exhibited a series of topographic and terrain maps by states and a series of special maps of stripping areas. Finally, there will be a presentation describing the nature of coal investigations by localities, now under way by the U. S. G. S. *In charge—George Cohee.*

• **UNITED STATES RUBBER CO.**

This display will feature United States Rubber Company line of Royal and Royal Master "Safety-Tested" cords and cables for the mining industry. Included in the display will be three of the actual machines used for testing U. S. Royal cords and cables at the factory in Bristol, R. I. All the testing machines will be in operation to show the amount of punishment this equipment can take.

• **UNITED STATES STEEL CORP.**

Cooperating in this display will be American Steel & Wire Co. and their Cyclone Fence Division, Carnegie-Illinois Steel Corporation, Columbia Steel Co., National Tube Co., Tennessee Coal, Iron and Railroad Co. and United States Steel Supply Co. Demonstrations, hand samples and pictorial displays will be featured in the combined exhibit and visitors will be able to secure a bird's-eye view of the other main floor displays from the upper level lounge provided in the Steel Corporation's exhibit space, which is located in front of the main entrance of the hall. This island tower, providing comfortable seating facilities on its upper level, will also serve as a background for a series of photographic illustrations of how U. S. S. Cor-Ten, manufactured by Carnegie-Illinois Steel Corporation, Columbia Steel Co. and Tennessee Coal, Iron and Railroad Co., is being used in the construction of light-weight long-life mine cars, such as those used at the Robena mine.

Samples of light weight rails and steel mine ties, Tiger Brand wire rope and cable of the types and sizes commonly used in connection with mining machinery and operations, and the various kinds of electrical wire and cable made by American Steel and Wire Company for mine use, will be available for examination. Samples of illustrations will display the types and uses of steel pipe and seamless tubes made by National Tube Co. for mine service. Representatives of the various subsidiary companies will be in attendance and literature will be available for examination or for office delivery.

• **U. S. STEEL SUPPLY CO.**

(See U. S. Steel Corp.)

• **VICTAULIC COMPANY OF AMERICA**

Will display its complete line of Victaulic pipe couplings, ranging from ¾-in. through 60-in. diameter, and its full-flow elbows, tees, reducers and accessories for the installation and operation of water supply, spray, drainage and all other types of pipe systems for mine and preparation plants. Operating units carrying air and water pressure will demonstrate the flexibility and leak-tightness of Victaulic jointing.

• **WATT CAR AND WHEEL CO., THE**

Will exhibit an eight-wheel mine car of approximately 10-ton capacity. *In charge—R. L. Edgar.*

• **WEDGE BAR SCREEN CORP.**

This display will have samples indicating the variety of applications for which Wedge Bar Screen can be used. *In charge—A. Tannenbaum.*

• **WEDGE WIRE CORP.**

Wedge wire screens will be shown in stainless, brass, aluminum and monel. These screens will show various apertures, sizes of wire and profiles. *In charge—Wallace E. Bixby.*

• **WESTERN CARTRIDGE CO.**

Will display a complete line of the various types of blasting caps manufactured and sold by this firm. The exhibit will place special emphasis on a series of colorful translites demonstrating the salient safety and performance features of the new Big Inch fuse cap. Another feature of the exhibit will be a guessing contest, the winner of which will be awarded a case of any standard gauge Western Super-X shotgun shells. *In charge—A. J. Barocca.*

• **WESTINGHOUSE ELECTRIC CORP.**

Will exhibit the new "Life-Line" motor, which is an all steel squirrel cage induction motor. This new motor is 35 per cent smaller in size than its predecessor and is lighter, more rigid, and can withstand greater impact. It is available in drip-proof, splash-proof and fan-cooled construction and its special features are a frame rolled from steel plate, feet and end brackets of heavy pressed steel, all welded construction, self-sealed, pre-lubricated ball bearings, rounded corners at top and bottom of slot cells that eliminate creasing cell insulation, special synthetic resin covered wire for coils, dynetrically balanced rotor, and interchangeability of parts. *In charge—R. L. Killebrew.*

• **WEST VIRGINIA STEEL AND MANUFACTURING CO.**

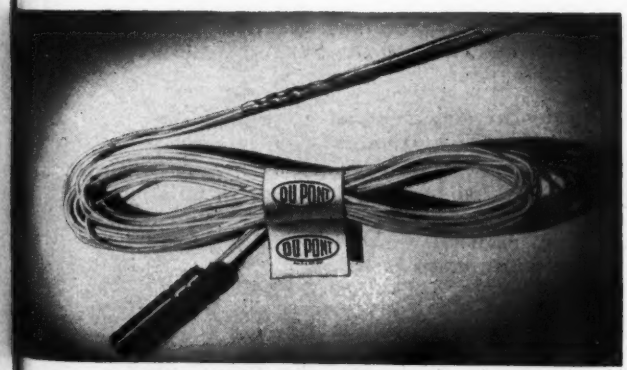
This exhibit will consist of improved mine switch stands, manganese frogs and mine ties. As a new product, there will be a layout of miniature prefabricated track. This layout will be so made that it can be assembled and disassembled into the various positions and arrangements that a mine track would have in actual use. *In charge—J. B. Haskell.*

Three coal getters to help you

GET MORE COAL —FASTER

"NITRAMON" produces excellent fragmentation in typical 17-hole blast with 40-foot over-burden at western Pennsylvania stripping operation.

"MONOBEL" AA allows foreman to inspect face less than ninety seconds after shot in West Virginia mine. Good fumes speed return of crews.



DU PONT ELECTRIC BLASTING CAPS are renowned for dependability. And remember—the most dependable detonator is the safest detonator.

For stripping operations Du Pont "Nitramon" is the ideal blasting agent because it is the safest. It cannot be detonated by the strongest blasting caps, open flame, friction, Primacord or even the impact of rifle bullets. And yet, "Nitramon" Primer dependably detonates the charge. "Nitramon" is easy to handle, and the sturdy, water-tight metal containers may be loaded well in advance of firing . . . whether conditions are wet or dry.

For underground mining Du Pont "Monobel" AA is the largest-selling permissible. Its water resistance gives good results even when the going is very wet. Its slow, heaving action puts large lump within easy reach of mechanical loaders. It is particularly suited for high, hard-shooting seams. Doesn't shatter the coal . . . shears face and ribs clean and square . . . and fumes are Class A.

For both above and below ground Du Pont Electric Blasting Caps help reduce risk of misfires resulting from current leakage and also possess maximum water-resistance . . . features provided by nylon-insulated wires and rubber plug closures.

* * *

***See these** and other dependable Du Pont products at the Du Pont Exhibit (Booth 513) at the American Mining Congress Exposition, Cleveland, May 12-15.*

E. I. DU PONT DE NEMOURS & CO. (INC.)
EXPLOSIVES DEPARTMENT, WILMINGTON 98, DELAWARE

DU PONT
REG. U. S. PAT. OFF.

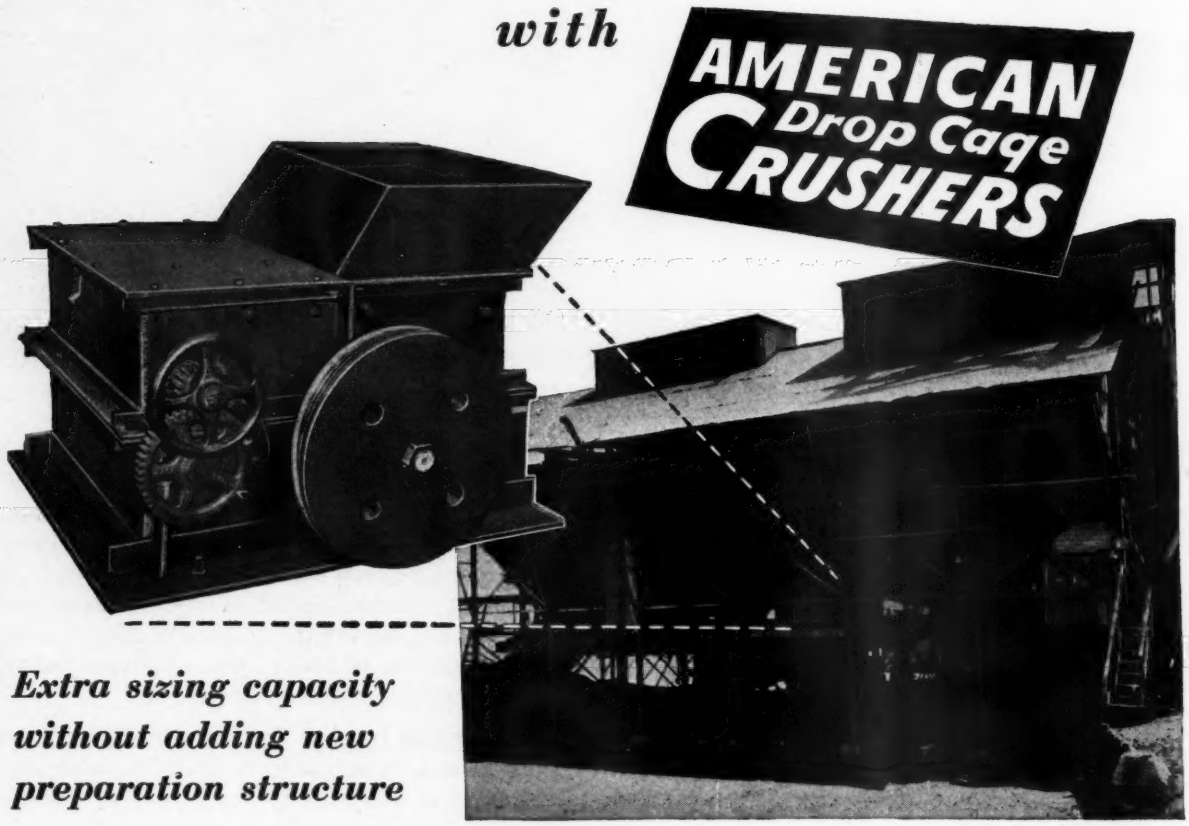
DU PONT { **"NITRAMON" • "MONOBEL" AA ELECTRIC BLASTING CAPS**

Products of Du Pont Explosives Research

MARKETING FLEXIBILITY *added*

without extensive plant alterations

with



Extra sizing capacity without adding new preparation structure

Mine preparation plants and service facilities frequently are confronted with market demands beyond their capacities. These installations have been erected without due regard to changing conditions. As a consequence they have limited flexibility in meeting new situations or increased demands excepting through excessive conversion expense.

Such a problem was encountered by the Perry Coal Company at its St. Ellen Mine, near O'Fallon, Illinois. In this instance, the problem was handled by the installation of an American Drop-Cage Crusher strategically placed under its nut coal bin. With such a location the coal either may be fed by gravity direct from the bin to the crusher and converted into ¾ inch screenings for truck loading, or it may be loaded from the bin into trucks bypassing the crusher.

Through this arrangement an additional size of coal is available for customers' requirements with substantial storage capacity enabling the company to give its usual prompt service. This installation has added new flexibility to the plant without extensive plant revision, without disrupting production and at a minimum cost.

Can your plant benefit and increase its flexibility with such an installation?

Write for details on the American Drop-Cage Crusher!

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1019 MACKLIND AVE.
ST. LOUIS 10, MO.

3 REASONS WHY

LUBRIPLATE *is the ideal lubricant for Coal Mining and Handling Equipment*

1. Reduces friction wear and power consumption
2. Protects machinery from rust and corrosion
3. It's a dependable and economical lubricant

LUBRIPLATE

DIVISION OF FISKE BROTHERS REFINING COMPANY, NEWARK 5, N. J.

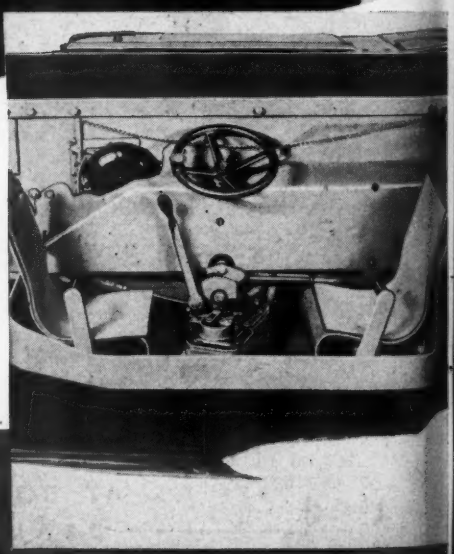
SEE US AT BOOTH No. 1603 CLEVELAND COAL SHOW

DEALERS FROM COAST TO COAST

with

JOY

COAL MINING EQUIPMENT



The trend is to JOY

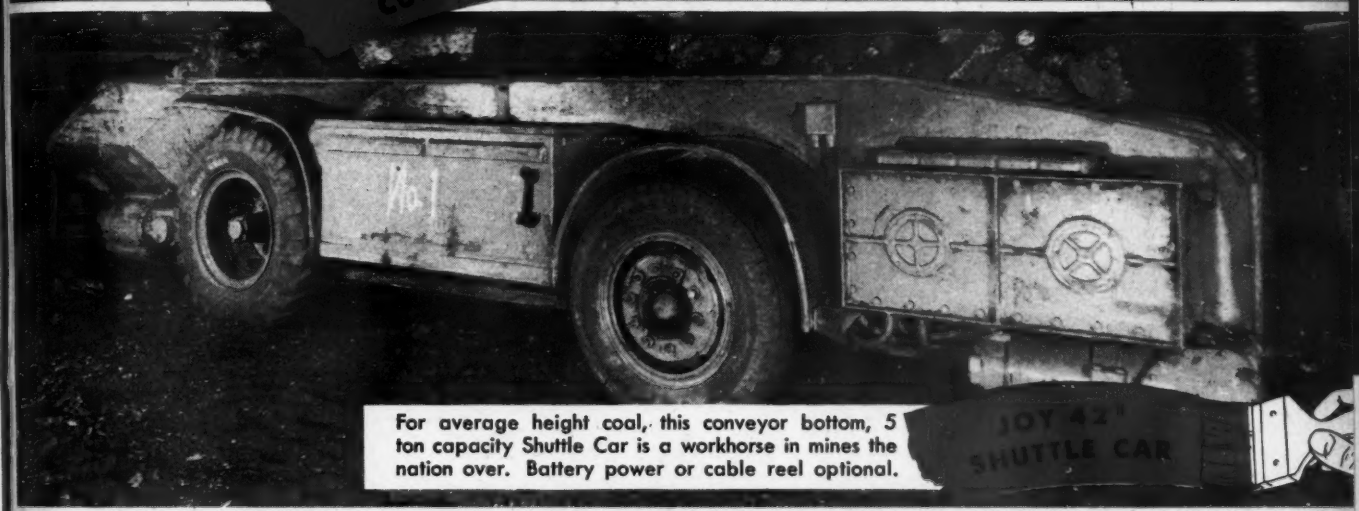
for increased production and lower costs

"The World's Most Complete Line of Modern Mining Equipment"

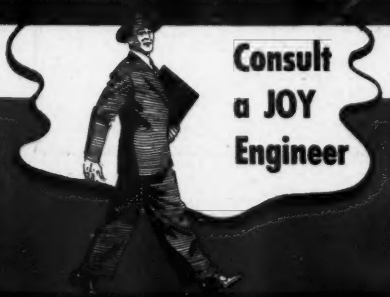
HYDRAULIC STEERING, 4-WHEEL DRIVE
JOY SHUTTLE CARS
turn sharp corners easily

The 4-wheel drive and 4-wheel hydraulic steering optional on Joy Shuttle Cars makes operation simple, takes sharp corners in narrow room entries easily. Finger-tip controls are reversible; also, battery or cable reel power for many mo[illegible]

A high tonnage coal cutter designed expressly for trackless mining. Universal cutting head, hydraulic drive motors and steering. Fast tramming, economical.



For average height coal, this conveyor bottom, 5 ton capacity Shuttle Car is a workhorse in mines the nation over. Battery power or cable reel optional.



Consult a JOY Engineer

Write for Bulletins

Maintains high production loading rates with utmost economy. An extremely mobile, easy to operate team-mate for Sullivan Cutters and Joy Shuttle Cars.

JOY MANUFACTURING COMPANY

General Offices: Henry W. Oliver Building, Pittsburgh, Pa.

You Are Cordially Invited

to Visit

*

CLEAN COAL HEADQUARTERS

*

Booth 528

*

American Mining Congress
1947 COAL SHOW

Cleveland, May 12-15

* * *

Designers and Constructors of Chance Sand Flotation for Wet Cleaning and American Pneumatic Separator for Dry Cleaning

* * *

FAIRMONT MACHINERY COMPANY

FAIRMONT, W. VA.

GUARANTEED

When properly used Page AUTOMATIC Buckets will outdig ordinary buckets of comparable size.

That's a guarantee you can easily prove for yourself by a competitive test. Compare the production of your present bucket with that of an AUTOMATIC. Hundreds of dragline operators in all kinds of digging have found that their AUTOMATIC buckets dig more yards at a lower cost per yard than any other dragline bucket they have ever used.

Here's why: Page AUTOMATICS dig right in at the first pull on the load line and get a full pay load within one to three bucket lengths regardless of the depth — 20 ft., 100 ft. or more. This means that most of your operations are under or near the end of the boom point where the minimum amount of power is required for hoisting the load. Perfect balance of the AUTOMATIC assures perfect control whether loading or dumping. Quick loading features of AUTOMATIC buckets mean less wear and maintenance on the bucket, cables and the dragline as well as minimum operator fatigue. For more complete details, see your own construction equipment distributor or write for new booklet "How to Get the Most Out of Your Page Automatic Dragline Bucket."

PAGE ENGINEERING COMPANY
Clearing Post Office • Chicago 38, Illinois

PAGE *Automatic*
DRAGLINE BUCKETS and WALKING DRAGLINES

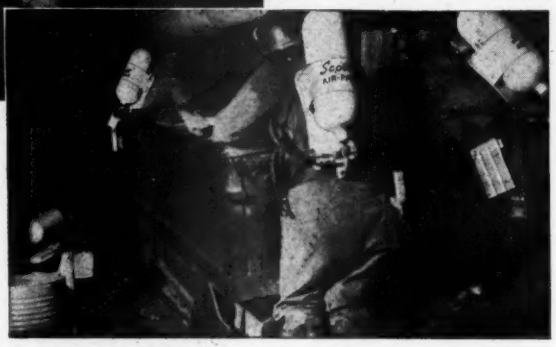
Where the goings TOUGHEST— YOU CAN BET YOUR LIFE ON Scott Air-Pak

The Inside Picture Story of a Western Metal Mine Fire

Below:—Specialists on mine fire-fighting complete a fire brattice by guniting. Members of the crew expressed a preference for the Scott Air-Pak and its fresh, cool *Certified Pure* air supply.

Left:—Members of the crew of trained fire-fighters applying water to the hanging-wall side of the vein where smoke was discovered issuing from an old timbered raise. The Scott Air-Pak's ample air supply lent speed to the effort.

Below:—Entering a breathing hazard zone, three fire-fighters are equipped with Scott Air-Paks flown to the fire by airplane from the Lancaster, New York, Scott factory. Clear vision from fog-free lenses won instant praise for the equipment.



The Dramatic Story of the Scott Air-Pak in Service

at a recent fire in a large western metal mine, is vividly portrayed in the photographs above. In all, 15 Scott Air-Paks were in constant use during the days spent in bringing the fire under control, and during this period, 15 more Scott Air-Paks were ordered by the mining company and have since been delivered. Here are some of the points of Scott Air-Pak's superiority stressed by the crew of fire-fighters who had their introduction to the equipment at that time:

Preferred by Experienced Fire-Fighters Because . . .

Practically no instruction is required in the use of the equipment. * The cool, dry air within the mask prevents all lens fogging and is invigorating. * There is no nose clip to come off accidently while working in a breathing hazard. * The dual gages, both on the cylinder and the regulator, provide a double check on the remaining pressure at all times. * The extreme simplicity in the testing and operation of the equipment and also in its maintenance sets the Scott Air-Pak out in front. * The difficulties and dangers of leaks common to oxygen equipment, are eliminated in the Air-Pak. * The diaphragm exhalation valve permits conversation within a reasonable range. * In use, the Scott Air-Pak harness gives the wearer complete freedom of motion—no confinement of activity. * These and many additional features earned for the Scott Air-Pak—the decided preference over all other self-contained breathing equipment available at the scene.

Meet Us in Cleveland
Booth 1324

Bureau of Mines Approval
No. 1308

SCOTT AVIATION CORP. 222 ERIE STREET LANCASTER N. Y.

SEE JEFFREY'S

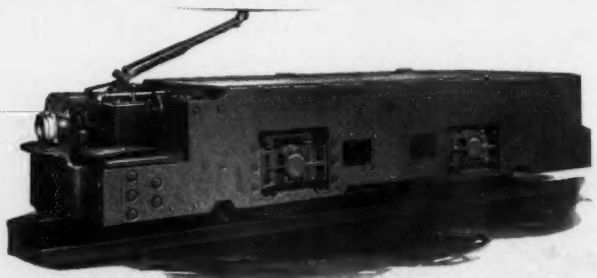
Modern Mine Equipment

AT THE MINING SHOW

CLEVELAND ★ MAY 12-15, 1947

JEFFREY SERVES THE COAL MINES

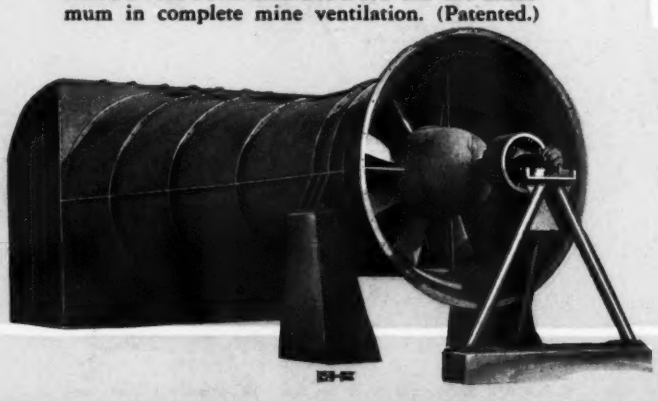
29-U Universal Coal Cutter for cutting anywhere in the seam. Hydraulically operated and can be furnished track mounted, crawler mounted or with pneumatic tires. (Patented. Also licensed under E. C. Morgan Patent No. 1,953,329.) Also Shortwall coal cutters in the famous 35 series—standard and low vein types including three for conveyor mining.



LOCOMOTIVES in trolley and storage battery types for main line and gathering service.

56-A Drilling Machine for fast drilling and properly placed shot holes. A wide range of adjustments, hydraulically controlled. Also Post and Hand Held Drills. (Patented and Patents Pending.)

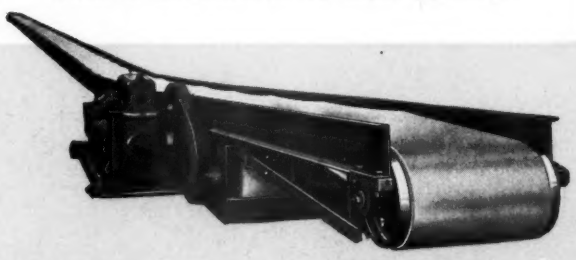
AERODYNE Fans and Blowers for the maximum in complete mine ventilation. (Patented.)



At the Show in Cleveland

It will pay you to "Stop—Look and Listen" at the Jeffrey Exhibit. You will see a wide variety of Jeffrey equipment . . . some of the 'Old Guard' units, some redesigned and some NEW . . . covering every phase of mining . . . drilling, cutting, loading, conveying, processing and transporting of coal as well as ventilating systems and a complete line of Renewal Parts.

Equipment designed and built to withstand the "rough going" underground . . . to produce continuously with a minimum of maintenance.

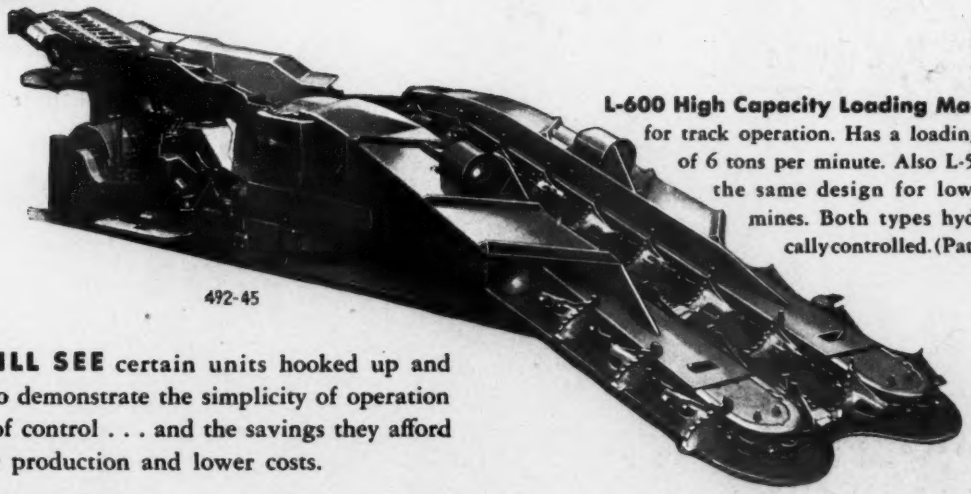


52-B Belt Type Entry Conveyor—can be extended up to 2500 feet. (Patented.)

MAKE THE JEFFREY

WITH MODERN MECHANICAL EQUIPMENT...

61-CLR Conveyor-Loader, a new and revolutionary low-type unit with pneumatic tires and hydraulic controls. Pivotally anchored at discharge point over conveyor, loader moves in an arc across room. Extensible gathering head permits loading from any angle. (Patent Pending.)



L-600 High Capacity Loading Machine for track operation. Has a loading rate of 6 tons per minute. Also L-500 of the same design for low vein mines. Both types hydraulically controlled. (Patented)

YOU WILL SEE certain units hooked up and running to demonstrate the simplicity of operation . . . ease of control . . . and the savings they afford in greater production and lower costs.

You will be able to talk with experienced Jeffrey engineers, familar with the requirements of modern mining, who are engaged solely in the design and development of this equipment—for YOU. You will be able to talk with other Operators . . . finding out why they specify Jeffrey to help them increase production and decrease costs.

43-L Shortwaloader—a combined cutter and loader for loading into conveyors. Cuts and loads simultaneously with a high degree of efficiency. The low overall height (only 26¾") makes it adaptable and desirable for low coal as well as high coal. (Patented.)

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Pipeline Transportation of Ores

By C. ERB WUENSCH
Consulting Engineer
San Francisco, Calif.

Whether or not Mr. Wuensch's proposal—first presented in 1944—represents the transportation method of the future, the idea is worthy of study by the coal and metal mining industries. The successful application of this scheme of ore transport could reduce costs of mining, hoisting, haulage and crushing. Problems of safety would be greatly simplified, equipment maintenance reduced, and labor costs lowered. Some of the difficulties inherent to operation have been subjected to careful analysis and with the development of a "magnetic braking" device, herein described, pipeline transportation of ores and coal from underground may be more than a remote possibility.

IN 1944,* I outlined a method of transporting ores in pipelines. This aroused considerable interest, but despite the favorable attitude of several prospective users, none of them translated their interest into action. Admittedly much remains to be done to commercialize the preliminary work that has been completed to date.

Originally I devised several items of equipment, but one vital step seemed fraught with operating difficulties. This involved an ore-medium mixing chamber to introduce the material into the pipeline and contemplated the use of an intermittent hydraulic lock in which the valves were synchronized with the strokes of a piston-diaphragm pump. A much simpler device, now partially developed, promises to solve this problem. This will be described in detail below, as the "Magnetic Braking Effect." In the accompanying flow-sheet, except for this simple device, all the items of equipment are used in standard practice either in the metallurgical field or in the oil drilling industry.

Discussion of Flow Sheet

(A) *Transportation of coal or ore through a vertical drill hole from a mine*—To facilitate the discussion, reference should be made to the accompanying diagram.

Two drill holes are used; one for the recirculated or return medium from the medium recovery and purification plant located on the surface. This recirculated medium is injected into the upward conveying pipe, through a nozzle into a modified hydraulic elevator, as shown.

The feed (coal would be crushed to 5-in. and ore to 4-in.) is introduced into the screw conveyor from the feed hopper. The screw conveyor is made of non-ferromagnetic material. At the discharge end of the screw two dc. electro-magnets are shown (in large diameter pipes it may be necessary to use ac. electro-magnets). These magnets clog the feed-pipe with the magnetite medium and prevent its leakage and loss back through the feed hopper. For the want of a better name, this is referred to as *Magnetic Braking Effect.* Although this chokes the line with the magnetic medium, it permits the screw to convey the non-magnetic coal or ore into the hydraulic elevator. The combination of the magnetically held magnetite medium and conveyor full of ore effectively prevents loss of medium into the mine workings. Only a small amount of water, slimes, and sands will filter through the mass of material in the conveyor pipe. This will be discharged into the peripheral overflow weir around the top of the feed hopper, from which it is reintroduced into the elbow of the return medium pipe by the piston-slush pump as shown. This small amount of dilution would not affect the medium.

The slush pump is a standard piece of equipment in use in circulating the drilling muds used in drilling oil wells. These are built to pump against pressures of several thousand pounds per square inch.

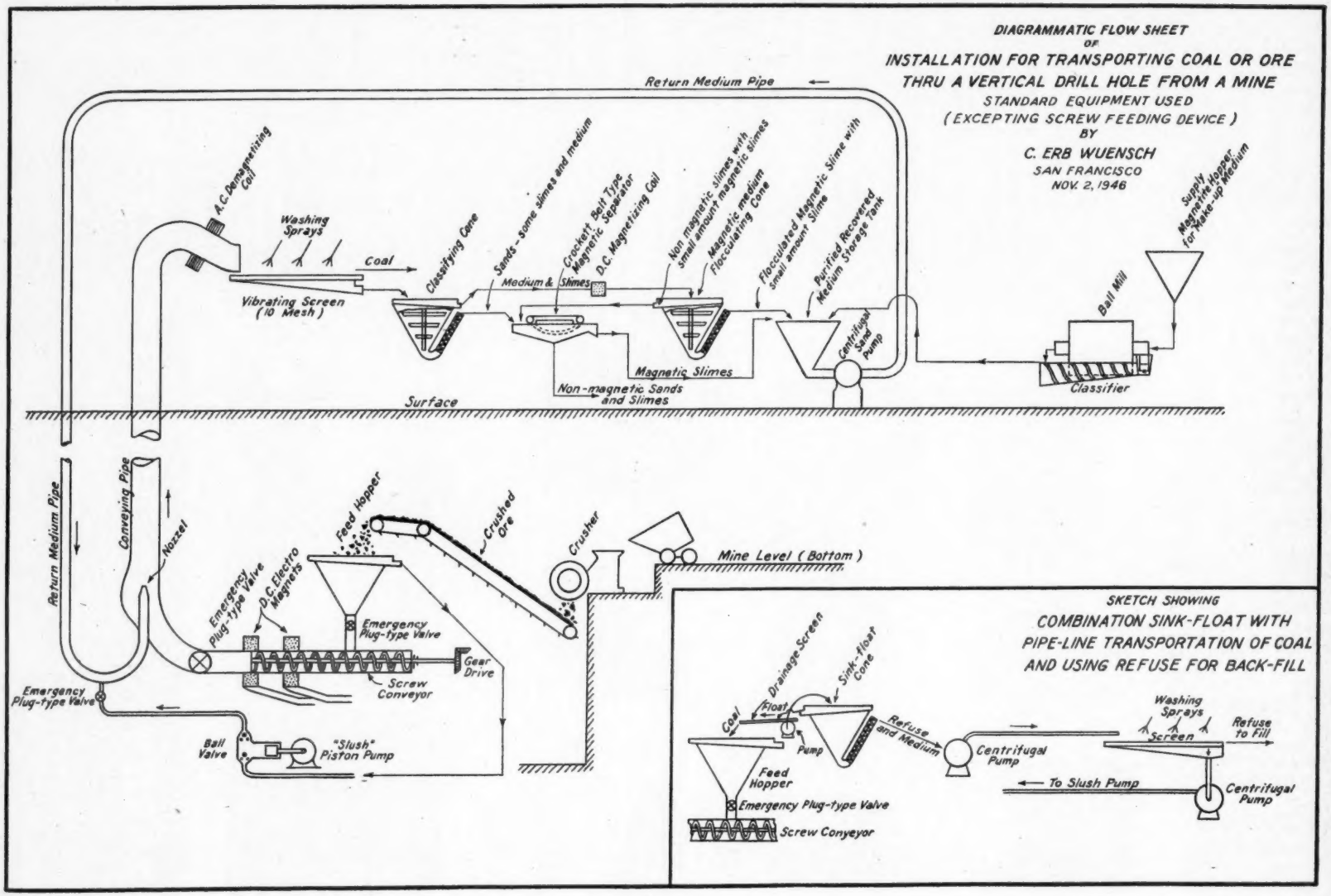
This new feeding device is of utmost importance. Originally I planned the use of a hydraulic lock. Inasmuch as there are no piston slush pumps available with valves which will permit pumping larger than ¾-in. rock-particles it was necessary to use this hydraulic lock. The ore would be dropped into the feed hopper and sink in the medium and displace an equal volume of medium, which would overflow and be reintroduced into the hydraulic lock by the piston pump when the lower valve was open and the upper valve closed. With ore this is possible because the magnetic medium would have a maximum specific gravity of 2.5. With coal, having a specific gravity of less than 1.8, the coal would float unless the medium were greatly diluted. This would then prevent proper closing (sealing) of the loosely-fitting valves used in the hydraulic lock.

Important features of this new feeding device are: First, only a small amount of pulp leaking through it would have to be reintroduced into the pipeline by the piston "slush" pump. Second, the medium return pipe and conveying pipe are in hydrostatic balance, so only sufficient pressure must be applied to the return medium line to overcome friction to maintain circulation. Third, it permits maintaining an even feed instead of an intermittent one as would be the case were the hydraulic lock employed.

The emergency plug-valves would only be used in case of a shut-down, power failure, or if it were necessary to drain the line. These are modified standard plug valves, with an auxiliary check valve above them to prevent rock particles from interfering with the valve closure.

Automatic density controls would also be used. These have been fully developed, but would too complicate these simple diagrammatic sketches to be included at this time.

* "Pipeline Ore Transport May Lower Mining Cost," by C. Erb Wuensch. *Engineering and Mining Journal.* April, 1944.


DIAGRAMMATIC FLOW SHEET
OF
INSTALLATION FOR TRANSPORTING COAL OR ORE
THRU A VERTICAL DRILL HOLE FROM A MINE
STANDARD EQUIPMENT USED
(EXCEPTING SCREW FEEDING DEVICE)
BY
C. ERB WUENSCH
SAN FRANCISCO
NOV. 2, 1946
Return Medium Pipe
A.C. Demagnetizing Coil
Washing Sprays
Coal
Vibrating Screen (10 Mesh)
Classifying Cone
Sands - some slimes and medium
Medium & Slimes
Crockett Belt Type Magnetic Separator
D.C. Magnetizing Coil
Non magnetic slimes with small amount magnetic slimes
Magnetic medium Flocculating Cone
Flocculated Magnetic Slime with small amount Slime
Purified Recovered Medium Storage Tank
Centrifugal Sand Pump
Supply Magnetite Hopper for Make-up Medium
Ball Mill
Classifier
Magnetic Slimes
Non-magnetic Sands and Slimes
Surface
Return Medium Pipe
Conveying Pipe
Nozzle
Feed Hopper
Crushed Ore
Crusher
Mine Level (Bottom)
Emergency Plug-type Valve
D.C. Electro Magnets
Emergency Plug-type Valve
Gear Drive
Screw Conveyor
Emergency Plug-type Valve
Ball Valve
"Slush" Piston Pump
SKETCH SHOWING
COMBINATION SINK-FLOAT WITH
PIPE-LINE TRANSPORTATION OF COAL
AND USING REFUSE FOR BACK-FILL
Drainage Screen
Sink-float Cone
Coal
Float
Pump
Refuse and Medium
Centrifugal Pump
Feed Hopper
Emergency Plug-type Valve
Screw Conveyor
Washing Sprays
Screen
Refuse to Fill
To Slush Pump
Centrifugal Pump

When the coal or ore reaches the surface it would be discharged on to a vibrating screen (after passing through an ac. demagnetizing field) with one or more decks. Here the medium adhering to the coal or ore particles are washed off by the washing sprays. The wash-water would contain all the medium and the coal or ore particles finer than 10 mesh.

In the classifying cone the sandy particles (containing only a small portion of slimes) would be trapped. These would go to a Crockett-Belt type magnetic separator in which the magnetic medium would be recovered. This separator is the type that has been successfully used in "sink and float" plants. The non-magnetic sands and slimes would then be segregated and wasted or sent to some appropriate unit in the mill.

The overflow of the classifying cone contains the bulk of the medium and slimes, and would pass through a dc. magnetizing coil before going to the flocculating cone. This coil magnetically agglomerates the medium into large flocs; these settle very rapidly in the flocculating cone and are withdrawn from the bottom and sent direct to the medium storage tank for reuse. The overflow slimes contain a small amount of medium and are also sent to the Crockett magnetic separator.

This simple initial classifying cone and secondary flocculating cone makes it possible to recover about 80 per cent of the magnetic medium, sufficiently purified for reuse without going to the relatively expensive Crockett magnetic separator.

The recovered and purified medium in the storage tank is then recirculated by a standard type centrifugal sand-pump to the return medium pipe for reuse.

About 0.5 lbs. of medium is lost per ton of material transported. A small ball mill and classifier (of any conventional type in general use) is used to prepare additional medium to compensate for the medium loss. The cost of the medium would amount to about 0.25c per ton of material transported.

(B) *Combination of "Sink and Float" with pipe line transportation of coal (or ore) using the refuse for back-fill*—Reference to the sketch shown in the lower right-hand corner of the flow sheet will facilitate discussing this. Only the separatory cone of a conventional "Sink and Float" plant need be placed under ground. The rest of the medium recovery plant is on the surface. In this combined operation the medium recovery circuit for pipeline transportation would also handle the "Sink and Float" operation in the mine. The coal (float product) would be partially drained of medium and then sent to the feed hopper of the pipeline transportation plant. The refuse and accompanying medium drawn from the bottom of the "Sink and Float" cone would be pumped by a centrifugal dredge pump in a pipeline to a point where the refuse is to be used for back-fill. Here a portable vibrating screen, mounted on a mine truck, would wash the medium from the refuse. An air jet blast might be used to facilitate the distribution of the refuse to nearby points of filling. The wash water would be sent to the piston "slush" pump of the pipeline transportation system. A small flocculating cone might be used to partially thicken this wash water. The sandy spigot product would go to the piston "slush" pump and the dirty overflow water could be used for the initial washing sprays. Purified medium would be bled from the medium return pipe to balance the medium requirements in the "Sink and Float" cone.

If ore instead of coal were initially treated by "Sink and Float," the waste would be the float product and the sink product the ore, just the reverse of coal.

Pipeline Transport vs. Shaft Hoisting

The following generalized figures are presented to give some comparative capital and operating costs:

(1) The medium recovery plants used in "Sink and Float" would be slightly more expensive than those that would be used in pipeline transport. Roughly, these would cost $35 per ton-day capacity (present prices), or for a plant handling 100 tons of ore per hour (2,400 tons per day), $87,500. The operating costs would be slightly less than "Sink and Float" plants, or 3.25c per ton including medium loss.

(2) Crushing ore to 4 in. and coal to 5 in. would require a 14-in. conveying pipe and a 6-in. medium return pipe. These would cost $4.50 and $1.70 respectively per foot.

The pipes would be placed in drill holes and cement poured around them. For the 14-in. pipe an 18-in. hole should be drilled at a cost of $20 per ft. (drilling to a depth of 1,000 ft.). For a 6-in. pipe a 9-in. hole would be necessary. This would cost $6 per ft. A churn drill would be most satisfactory, and might be contracted by an oil well drilling contractor. These combined would cost $26 per ft.

Additional equipment would include a slush pump $4,000, magnets $2,000, valves $1,000, extra-heavy pipe $1,000 (where exposed to mine workings), miscellaneous $5,000; a total of $13,000.

Resume:

Recovery plant	$87,500
14-in. pipe	4,500
8-in. pipe	1,700
Drill holes	26,000
Cementing pipe	2,000
Underground equipment	13,000
Excavation	10,000
Total capital cost	$144,700

(3) A four-compartment shaft, including two hoisting compartments, one compartment for men and supplies and a manway and pipeway would cost about $250 per ft., or $250,000.

Resume:

Four-compartment shaft	$250,000
Hoisting equipment	175,000
Ore pockets, etc.	25,000
Total	$450,000

(4) No credit to be allowed for initial shaft because invariably mines are opened up with a smaller shaft. With pipeline transportation this would suffice for men and supplies, and no large hoisting shaft would be necessary.

(5) Operating costs of pipeline transport (including medium recovery) would be slightly lower in general than hoisting. This is difficult to determine, because each operation is different. It would require about 2,000 hp. for the hoist and pipeline transportation about 300 hp. (With coal it would be about 150 hp. as the coal would float to the surface in the medium, and only about 50 hp. would be required to recirculate the medium, which is in hydrostatic balance.)

The big saving in operation cost would result from the following:

(a) Reduced tramming cost underground.

(b) Upkeep on shaft.

(c) No transfer and tramming on surface.

(d) Saving of time lost in hoisting and during changing of shifts. Shift changes could be staggered and spread out so that the whole operating program would not revolve around hoisting. This is difficult to evaluate at this time, but would result in important saving in man-hours.

Other Applications of Pipeline Transportation

Pipeline transportation out of haulage tunnels versus car haulage or belt conveyors—The advantages of transportation out of haulage tunnels might well be emphasized here. With the present methods of track-car-haulage attention is called to the following:

1. Initial equipment cost is high.
2. Large-sized tunnels must be driven to permit use of large-sized

equipment. This adds considerably to the capital costs as compared to what they would be if a small-sized tunnel would suffice to haul only men and materials.

3. For larger mines, trolley electric locomotives are most practical. The overhead exposed trolley wire is always a source of danger to the men, especially in wet places. If ore were transported in pipelines, storage battery would suffice for men and supplies.

4. The haulage cycle of operation involves first loading cars from chutes to gathering points; second, the actual haulage; third, unloading (dumping) and last, the return trip empty. Hence it is obvious that the equipment is actually used for hauling perhaps less than 25 per cent of the time.

5. In addition, interference by the ore haulage with the movement of men and supplies, causes much lost time in man hours. This is indeterminable but a very costly charge against operations.

Now consider underground conveyors:

1. They are expensive to install and require constant attention. The upkeep underground would be especially high.

2. The tunnels would still have to be large because the structural installations for the belt conveyors are bulky. Track installations would still have to be provided for men and supplies.

3. Belt conveyors alongside of track haulage in dark tunnels would be extremely dangerous to men.

Now consider pipeline transportation:

1. The ore must be crushed in the mill; why not do the primary crushing underground?

2. A pipeline transporting ore continuously would have a tremendous capacity compared to intermittent haulage.

3. Both the conveying line and separate return medium line would occupy but a small part of the tunnel and could be placed over the drainage ditch and would not interfere with the track haulage of men and supplies. Hence, smaller tunnels and less costly track haulage would be necessary, making the capital cost vastly less.

4. Shorter hauls from chutes to underground crushing plant, especially by use of smaller auxiliary crushing plants in various parts of mine. The material from each unit could be piped in branch lines to the main pipeline out of the haulage tunnel.

5. Less storage capacity and less car equipment would be required.

6. No dumping of cars at the portal would be necessary; neither would transfer storage bins be necessary. The ore would be carried in the medium through all the crushing stages up to the ball mill circuit.

7. The one big disadvantage would be the crushing of the waste if no space were available to use it underground for filling. This could be solved by providing a separate storage bin for waste, and it could be crushed and pumped during the night shift after flushing the ore out of the line with recirculated medium. The cost of crushing probably would be more than offset by the other operating economies.

8. The whole operating schedule could be simplified by the use of pipeline ore transport, with important saving in man-hours.

Surface Pipeline Transportation

Many mines are situated at high elevations above the mill or shipping point. In such instances excessive velocities would be developed in the pipeline and wear would be excessive. To throttle the flow with valves would be like trying to control the discharge of a penstock to a water turbine were the water loaded with rocks. However, by the use of an electromagnet around a short non-ferromagnetic section of pipe at various points along the line, the "magnetic braking" would simply and efficiently control the flow. The magnetic medium would clog the line and line it so that no abrasion of the pipeline would result.

Also in a pipeline over irregular terrain, in case of a shut-down, the ore particles would tend to settle to the low points and make resumption of pumping difficult. This would necessitate extra-heavy piping to withstand the excessive starting pressures of the "slush" pumps. By the use of the magnetic "brakes" at points on each side of the low point, this settling would be prevented. Then when pumping was resumed, the magnetic "brakes" could be shut off and it would require much less pressure to restore circulation. The loaded limbs of the pipeline would then tend to move slowly to the low points and by so doing tend to loosen the medium-ore column in the line.

Miscellaneous Comments

A few other points should be added here.

1. With magnetite used as a medium in "Sink and Float" processes, a top specific gravity of only 2.6 is attainable, if it is to have the proper degree of fluidity. The same medium used in pipeline transport would be about 2.8, but it would be much more viscious. It would be a mud. However, in the flocculating cone step the slight contamination with ore slimes reduces the specific gravity to about 2.5 and increases its viscosity slightly. This is desirable because it helps suspend the heavier ore particles and minimizes abrasion. Lower velocities can be used to effect the transport. This flocculating step also greatly reduces the amount of material to be handled by the Crockett magnetic separator; the most costly piece of apparatus used in the flowsheet.

It will require 8 tons of magnetite per 1,000 ft. of 8-in. pipe and 42 tons per 1,000 ft. of 14-in. pipe.

2. By pouring cement around the pipe in the drill holes, standard pipe can be used (except in places where it is exposed in the mine workings). The pipe is virtually only a form for the cement. Investigations should be made to determine a wear resistant cement and one that would make a firm bond with the pipe. In many installations, where the rock formations are hard, no casing would be necessary.

3. In surface installations (or in underground installations in tunnels) where leaks are found the pipe can be wrapped with rubber and a metal jacket clamped over it. Thus at these points there would be virtually a rubber lined pipe as it wears through. Some new methods have been developed in the oil industry whereby the worn parts may be detected before a leak occurs. These methods should be investigated.

4. There are many important potentialities in improving the "magnetic braking effect." A three-phase rotating field should be investigated. This would advance the clog of magnetic medium. If it were not for the cost, the pumping itself could be done along the whole pipeline.

Reopening an Abandoned Coal Operation

(*Continued from page* 38)

by the Old Ben Coal Corporation and serves to provide a distinctive marking for this company's product which is easily recognizable in retail yards.

Old Plant Modernized

The surface structures at the old No. 9 site have been thoroughly rehabilitated and modernized. Fortunately when these were built new in the early part of this century, they were built for permanence, and as a consequence, they were structurally in good condition when the recent modernization program was initiated. Naturally, there has been considerable remodeling; as already described the tipple has been converted into a mechanical coal preparation plant, and in addition, the old power house has been reconverted into a wash room, a repair shop for mining equipment and a repair garage for the coal haulage trucks.

A new Jeffrey Aerodyne fan is about ready to be put into service. This will be used as a blower and to prevent freezing in the air shaft, the installation has the unusual feature of heating the in-take air through a system of steam radiators installed in the fan portal.

An underground connection between the old and new shafts was made by reopening an entry through the old workings—a distance of about one mile. As this is projected for a long life, the roof supports are of permanent construction.

The ribs are solid walls of concrete tile, 8 in. thick with 16-in. concealed pilasters spaced 4 ft. apart to support steel I-beams, used as crossbars.

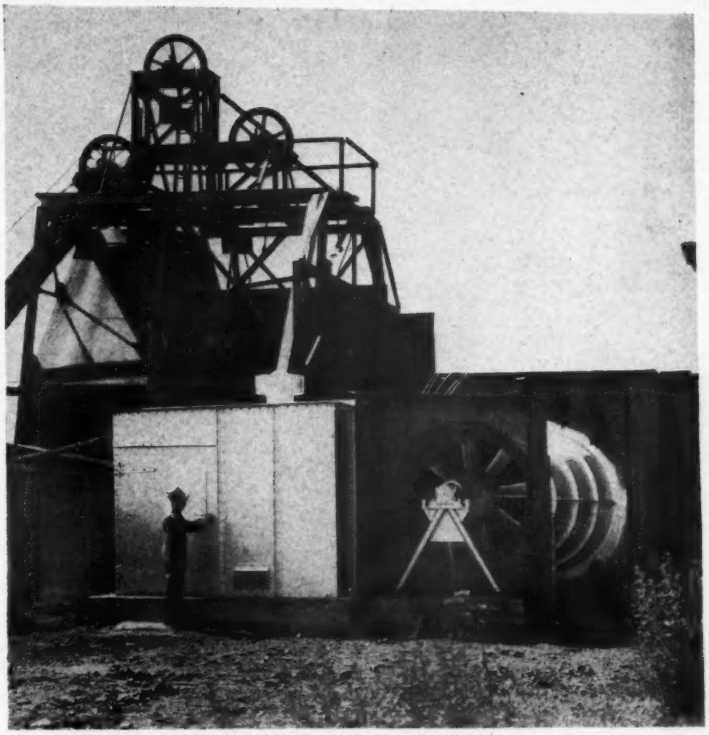


Fig. 7. A modern fan installation

Between each beam, in place of wood lagging, are pre-cast 3½-in. reinforced concrete slabs, each about 18 in. wide and 4 ft. long.

Acknowledgment

There is not sufficient space in this article to describe more than a few of the highlights of a real accomplishment made by the operating and engineering staffs of the Old Ben Coal Corporation. Obviously, there were a multitude of problems not mentioned here that had to be solved—all were taken in their natural course and most of them are already forgotten by the men who worked out the answers. Directed by George F. Campbell, vice president, and installed under the direct supervision of Roy L. Adams, general superintendent—both pioneers in mechanized mining—the construction of this operation is conclusive evidence that the coal industry is still going forward.

Inspiration Copper Plans Open Pit Operation

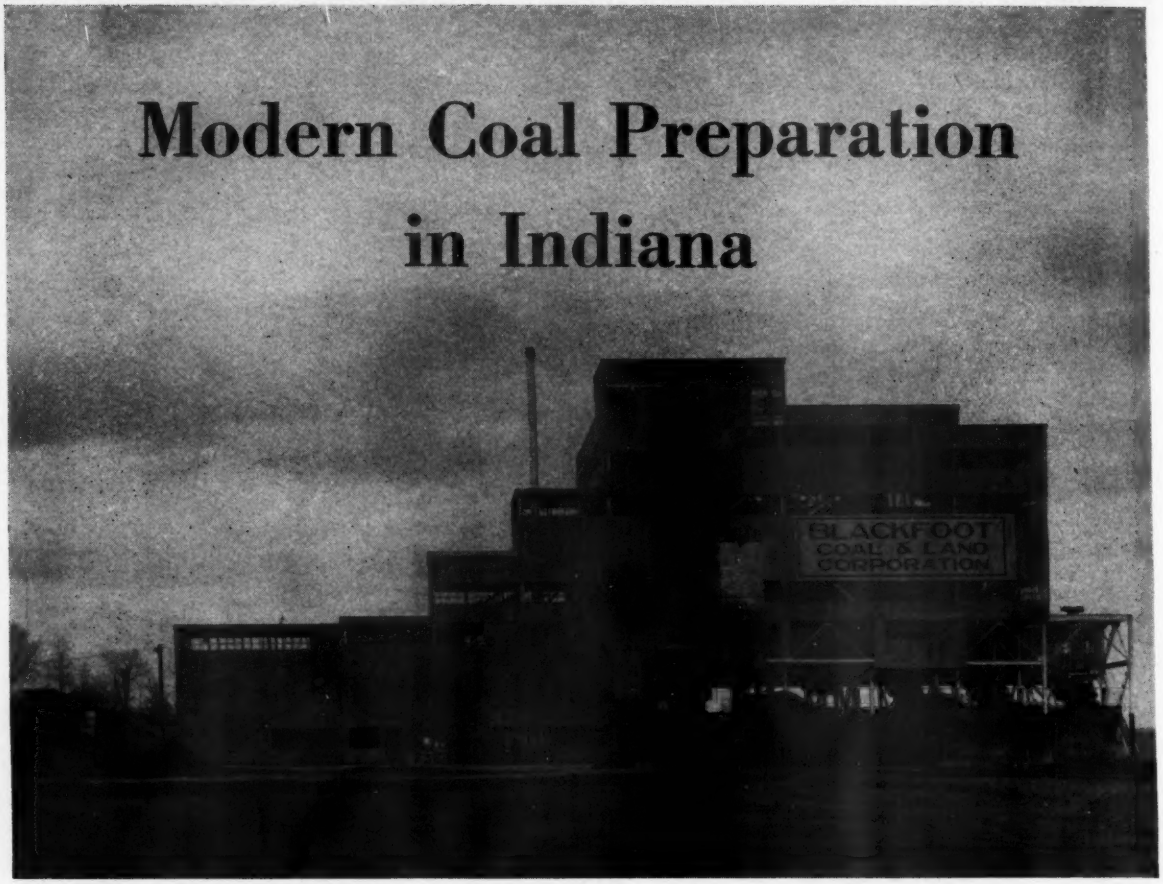
Inspiration Consolidated Copper Company has announced its plans for mining certain portions of the Inspiration ore body by open-pit methods. According to a statement by P. D. I. Honeyman, general manager, the project should be completed to a point where operations can be started early in 1948.

Ore will be hauled from the pit to a crushing plant, equipped with a 42-inch gyratory crusher, to be located in the gulch above the O'Brien residence at Inspiration. The crushed ore will be conveyed by belt to an ore bin at the end of a short railroad spur connection to the company's Main Shaft to Live Oak line. Contract for the grading of the railroad spur and various roads which will be required has been let to Orr and Orr Construction Company.

Two large electrically-operated shovels and one smaller Diesel-type shovel will be utilized in the pit for handling ore and waste. Nine giant dump trucks, with a capacity of 14 cubic yards each, will transport the ore from the pit to the railroad spur, and a number of smaller trucks will be used to service the shovels, bulldozers, drills, etc. A garage is to be constructed in the present tunnel supply yard for servicing the large trucks and other equipment. This location also will serve as headquarters for the open-pit portion of the mining operations, and a change house will be erected there.

The decision to mine a portion of the Inspiration ore body by open-pit methods is the result of studies started about a year ago and which indicated the possibilities of using that method of mining where the ore body lies close enough to the surface to make the removal of overburden feasible. The proposed new operation means that in the future Inspiration will mine by both underground and open-pit methods, but the total tonnage treated by the leaching plant will not be increased.

Modern Coal Preparation in Indiana



The Latest Ideas in Equipment Designs Are Employed at the New Operation of the Blackfoot Coal and Land Corporation

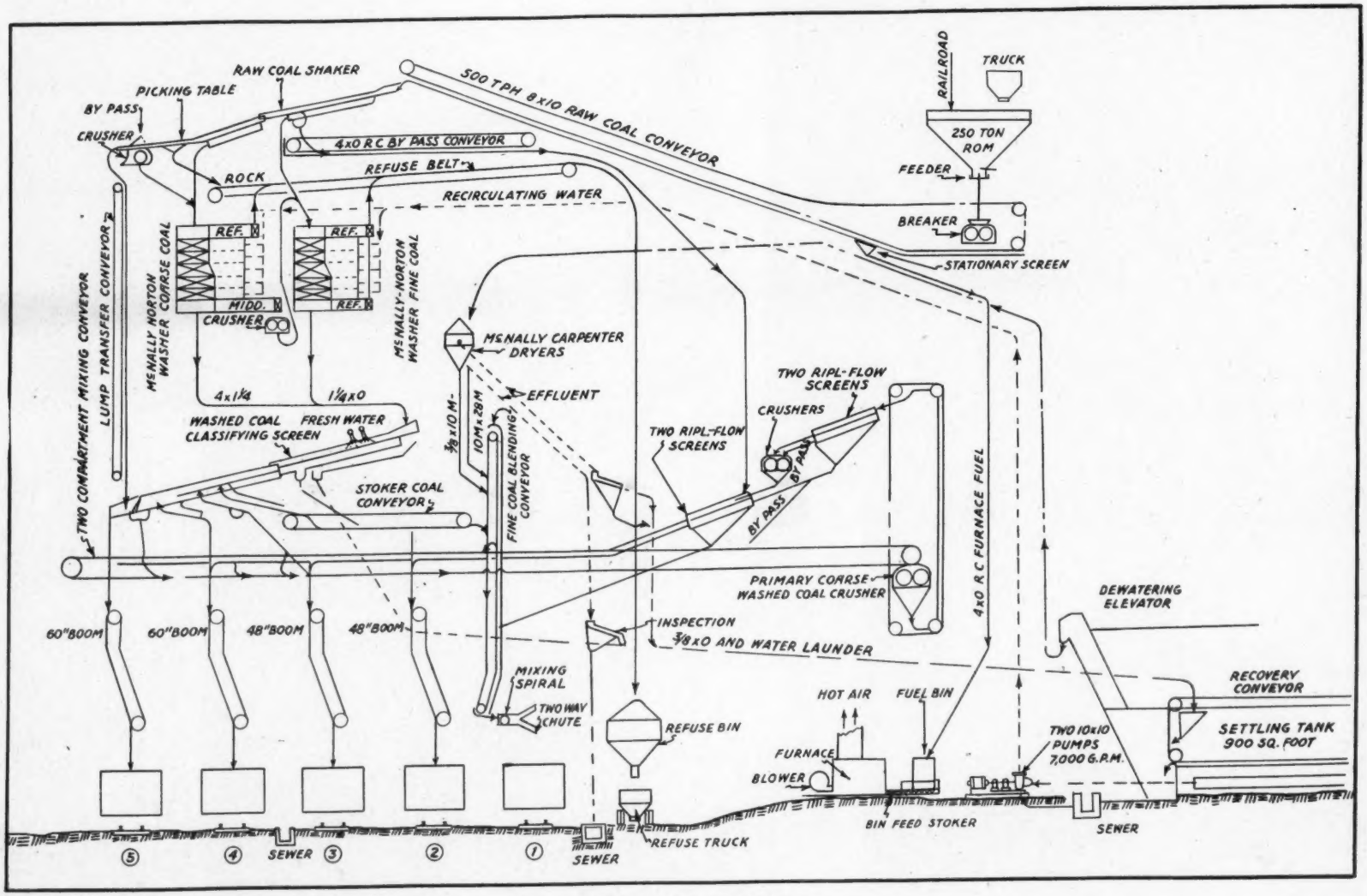
A NEW preparation plant was recently completed in southern Indiana to treat coal from the open pit mines of the Blackfoot Coal and Land Corporation, working the No. 5 seam. The plant, following the present trend toward complete mechanization, was designed to accomplish two purposes—primarily to make a high quality product for the market but secondarily, to help secure a higher coal recovery from the pits. And to do both at a minimum cost.

Development of Mechanical Cleaning

In planning this operation there was quite a background of experience to draw from, located as it is, in one of the fields which pioneered modern strip mining. As a matter of historical fact, this field also pioneered machine operation underground and much of the progress in coal mine mechanization is due to the developments in this state. Successful deep mining still operates here, but the gently rolling terrain with coal beds close to the surface have been natural encouragements to stripping and the last generation has seen a substantial part of the coal production from this field change to open pit methods. This same generation has also witnessed the evolution of coal preparation from hand to mechanical processes and, as in the case of most new developments, the evolution was forced by economic considerations in one form or another.

The slate removal from No. 5 seam in this locality is not particularly difficult and in the past a satisfactory separation was made by hand picking. However, times have changed; modern stripping equipment produces large tonnages which mean that the coal must pass through the cleaning process in such quantities and at such high rates of speed that hand picking is impractical. In addition, market specifications have become more strict, requiring a uniform product both as to size and quality, so, to satisfy the demands of practicability, economy and efficiency, mechanical cleaning had to be called in.

Then there is another angle; the increased tonnages of coal mined have been accompanied by greater amounts of impurities to handle, coming from two sources. First, high capacity shovels cannot afford to be slowed down by surface cleaning at the pit so everything must be loaded out. Second, under deep overburden removal, the percentage of coal recovery becomes an important cost item and coal cannot be wasted by being left unmined; consequently some spoil is apt to be picked up. The present-day answer to both these questions



Flow sheet of Blackfoot Plant

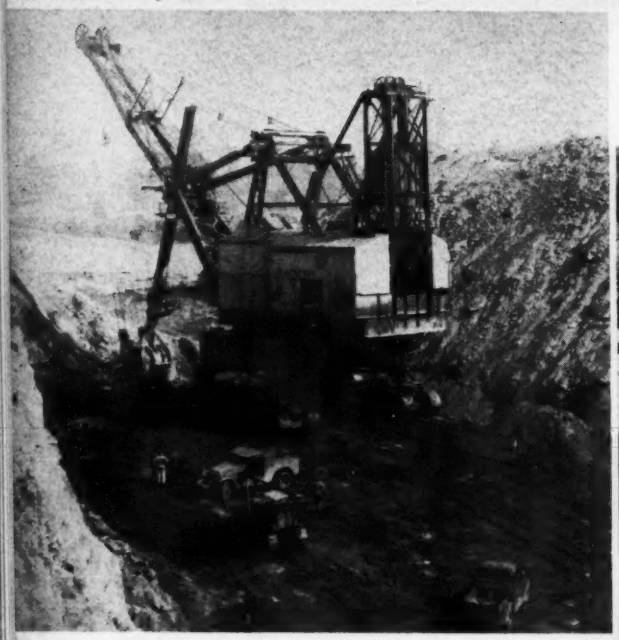


Fig. 1. Left: Bucyrus-Erie electric shovel with a 21-cu. yd. dipper loads overburden

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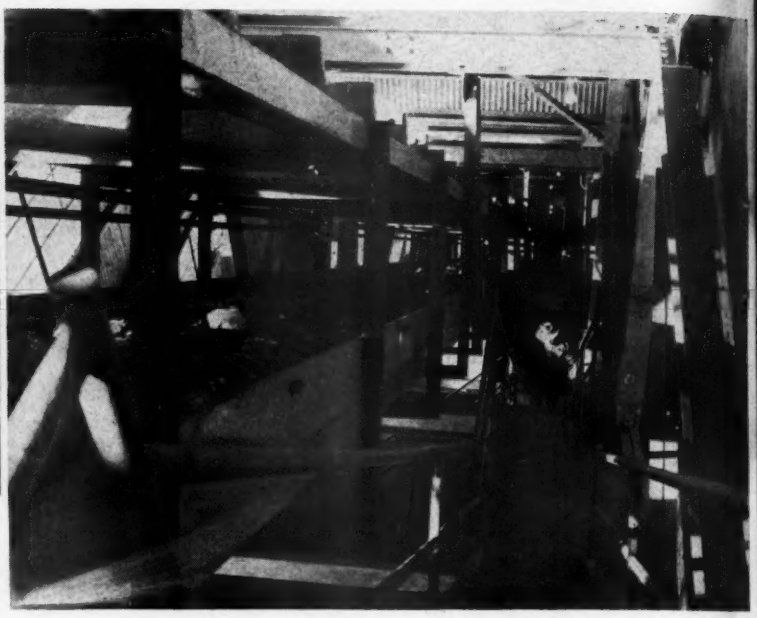

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Fig. 2. Right: A drag chain conveyor elevates coal a vertical distance of 107 ft. to the primary screens

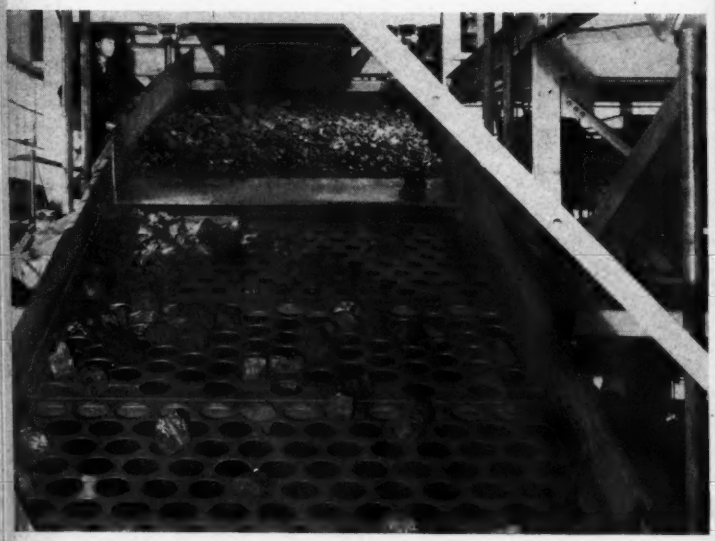

Fig. 3. Above: The first step in the preparation—primary sizing with shaking screens

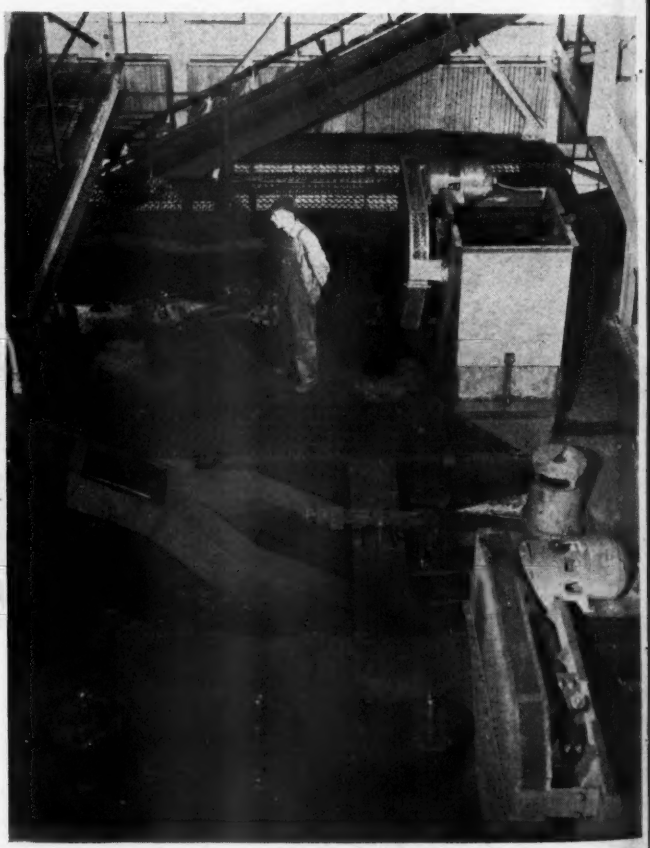

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Fig. 4. Right: After crushing, the slate is removed from the coal by McNally-Norton washers

Fig. 5. Separation of fine sizes is assisted by hydraulic action at the end of high-speed reciprocating screens

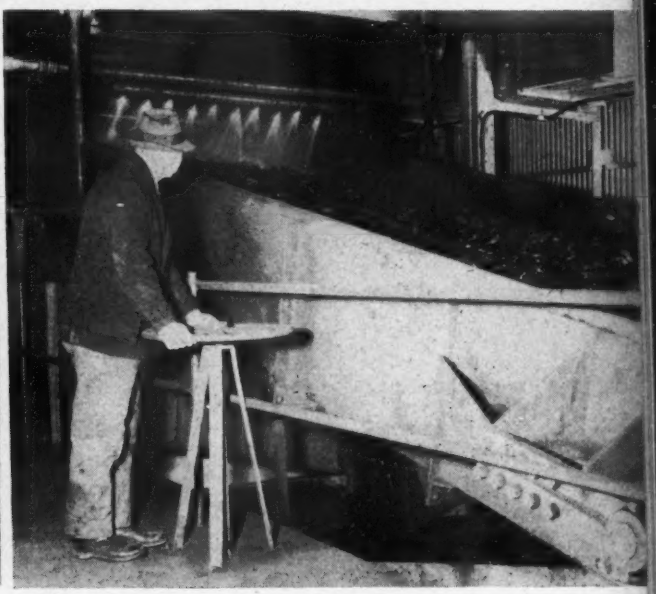


Fig. 6. A series of Ripl-flow screens are used in the making of small-size stoker coal

is to have the shovel operate continuously and load all the seam, passing the burden of slate removal on to the mechanical cleaning plant where it really belongs. Actually, at Blackfoot, this burden is not very heavy; the rejects are less than 10 per cent and, as the middlings are crushed and rewashed, the coal loss is less than in hand picking.

An Over-All View of the Operation

The preparation plant constructed by the McNally-Pittsburg Manufacturing Corporation of Pittsburg, Kans., is designed along thoroughly modern lines and is built to handle 500 tons per hour. The slate separation is by wet washing, treating everything below 4 in. and the complete process from the raw coal feed to the finished product follows the latest practices in cleaning, screening, crushing and blending to form standard and special sizes for industrial, railroad and domestic use. The final operations of drying and de-dusting complete the preparation chain.

The building, as shown in the opening illustration, is of welded steel construction with sheet metal siding and roofing; its over-all dimensions are 65 ft. wide by 170 ft. long, and 76 ft. high, with a truck unloading hopper and a main conveyor gallery connected to but outside of the main structure. Inside the building, safety has been given first consideration by installing guards at all mechanical or electrical hazards, and by safety treads on steel floors and stairs. Adequate daylight is provided by a multitude of windows —2,800 panes of glass to be exact— so that a minimum of artificial lighting is needed. Heating is furnished by an automatic coal stoker hot air furnace, with air circulated by an electric fan, thermostatically operated and controlled.

The normal capacity of the cleaning plant is about 70 carloads of coal per day which is loaded over five railroad tracks, served by the New York Central Railroad. No. 1 track which is for slack has a loading chute; No. 2 and 3 tracks for the small sizes have 48-in. loading booms, while No. 4 and 5 have 60-in. loading booms for the larger sizes. The tipple yard is laid with 90-lb. rail and has a total capacity of 120 railroad cars with storage for 100 loads below the tipple. The cars are weighed at the end of the yard on a new type Winslow 20-ft. track scale, which weighs one end of a car at a time—front truck and rear truck—automatically recorded by a Streeter-Amet recorder.

The strip pit, located near the cleaning plant, operates in the No. 5 seam which has an average height of about 4½ ft. and an overburden ranging from a few feet to as much as 60 ft. (see Fig. 1). It is stripped by an electric shovel with a dipper of 21-cu. yd. capacity and the coal is transported to the cleaning plant by trucks of from 18 to 25-ton capacity, hauling over well-constructed private roads, built and maintained by the company. At the plant, the trucks unload at ground level into a 250-ton bin at one end, but outside of the main structure; this bin may also be provided with a railroad unloading track so coal from distant pits may be shipped here by rail for preparation.

Coal Flow Through the Preparation Plant

The preparation starts at the bottom of this hopper bin where all coal goes through a 60-in. reciprocating plate feeder into a double roll 30x60 breaker set under the bin and about 30 ft. below the ground surface. This reduces the coal to 8 in. minus and is the first step in the process which is shown in complete detail on the accompanying flow sheet. From the crusher, a drag chain conveyor 48 in. wide (see Fig. 2) takes the coal for a distance of 181 ft. on a 30-degree pitch 107 ft. up to the top of the main plant structure where it discharges onto a set of shaking screens. The capacity of the conveyor, which is also the capacity of the cleaning plant, is 500 tons per hour.

Shaker screens, of the reciprocating type (Fig. 3), make the primary separation into the conventional three sizes. The screens can be varied to make any three sizes desired, but unless some special product is wanted, the usual practice followed is to make 8-in. x 4-in. lump, 4-in. x 1¼-in. nut, and 1¼-in. x 0-in. slack. Each of these sizes follows a separate course through the cleaning plant as will be described in the succeeding paragraphs.

The 8-in. x 4-in. lump after passing over a hand-picking table (certain of the picked slate is crushed and cleaned) can be loaded directly into railroad cars over the 60-in. boom on

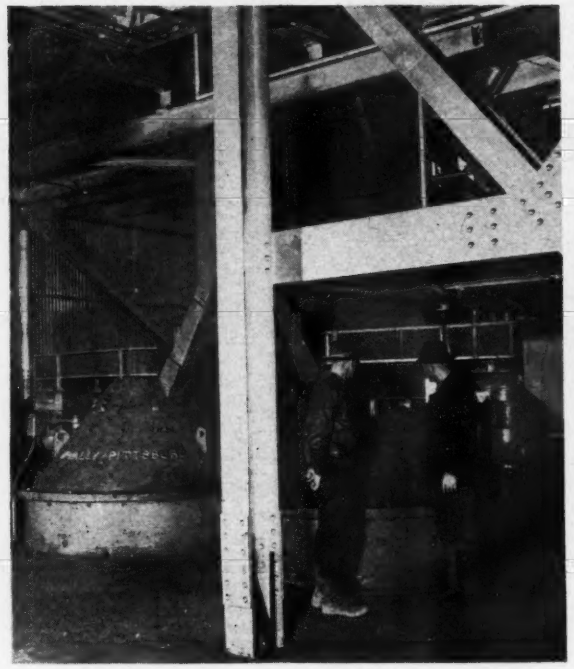
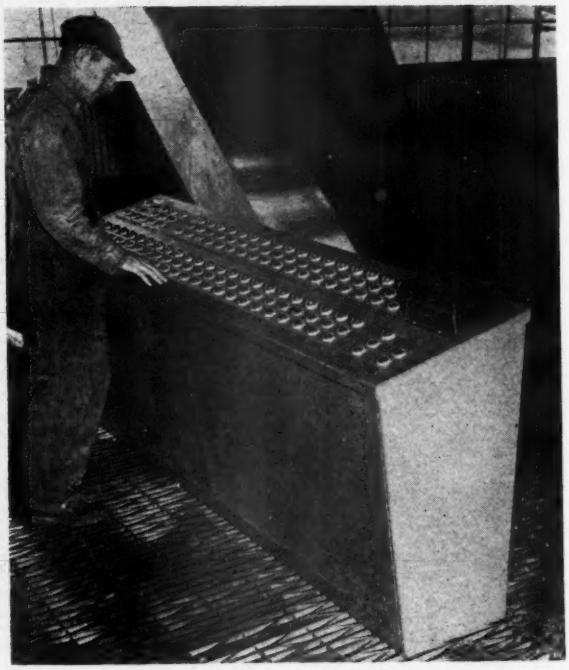


Fig. 7. Undersize passes through centrifugal driers prior to blending or loading into railway cars



A control panel with sequence starters operates all motors in the plant

No. 5 track. Or it may be diverted through a crusher—standard duty type 24 x 36, which breaks it into a 4-in. minus size. The crushed product then goes to a McNally-Norton coarse coal washer (see Fig. 4) where it joins with the 4-in. x 1¼-in. coming from the primary shakers. The washing is by the McNally Compound Cleaning System which makes three products—clean washed coal, middlings and refuse. The separation can be set to vary the quality of each of these three products, and the usual practice is to have the "borderline" portion of the seam pass into the middlings for further treatment. Following this system, the 4-in. x 1¼-in. washed clean coal goes to the classifying screens, the reject goes to the refuse bin and the middlings pass through a double roll crusher into the fine coal washer joining with the 1¼-in. x 0-in. from the primary shaker. (The 1¼-in. can be loaded direct from the shaker into the railroad cars if desired.) The clean coal from the fine coal washer goes to the classifying screens joining with the 4-in. x 1¼-in. from the coarse coal washer.

The classifying screens are the McNally-Pittsburg high-sped reciprocating type where the fine sizes are assisted in their separation by hydraulic action at the receiving end of the screen (see Fig. 5). These can be set to make a variety of sizes which can be mixed and blended into a wide choice of combinations as the market requires.

The screened product is generally loaded direct into railroad cars but a further separation is possible by passing the larger sizes through a primary double roll coarse coal crusher and onto a series of Ripl-flow screens and recrushers to make small size stoker fuel (see Fig. 6). The undersize from the classifying screens, usually ⅜-in. x 0-in., passes through a settling tank and dewatering elevators to two McNally-Carpenter centrifugal driers (see Fig. 7). The product recovered from the driers, usually ⅜ x 10 mesh, can be blended with the coarser sizes or loaded direct into railroad cars.

Auxiliary Facilities

All rejects from the washers goes into a refuse bin from where it is hauled by trucks to be used on the roads between the plant and the strip pit.

The effluent from the driers is passed into a settling tank with a capacity of 900 sq. ft., located inside the building paralleling the main conveyor. This is equipped with mechanical skimmers and after further clarification by settling, the water is recirculated through the cleaning plant.

The cleaning plant uses about 200,000 gals. of water per day which is taken from a 25-acre artificial lake built on high ground above the plant. It is the intention to stock this lake with fish and convert it into a recreational feature where boating and fishing can be enjoyed.

Economy in Construction and Operation

The plant was designed for conservation of space and for economic use of electric power. From the R. O. M. feed to the primary shakers at the top of the building, the coal moves by gravity throughout the cleaning process, except where there is recrushing. This general downward movement is indicated on the flow chart. To conserve space in the structure, the loading booms reverse the direction of the travel at the end of the classifying screens, making this part of the installation very compact.

In conclusion, due credit should be given to the contractors and members of the coal company for a job well done. Under the direction of Charles C. Kerwin, president, and Virgil C. Kibler, treasurer of the Blackfoot Coal and Land Corporation, assisted by Henry E. Fitch, superintendent of operations, and Wayne Burdette, tipple superintendent, an outstanding accomplishment has been made, which exemplifies the determination of the coal industry to meet all competition in the market for heat and power.

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The Portland Mine has been famous in Cripple Creek history

By M. H. SALSBURY
Superintendent
Portland Mine
Victor, Colo.

An Experiment in Mechanization

Past attempts at mechanization of small development headings have not been successful at Cripple Creek, Colo.; consequently recent experiments with underground loaders at the Portland mine are of unusual interest. The difficulties inherent in the driving of small headings may be greatly diminished through intelligent experimentation similar to that undertaken at the Portland.

IN the Cripple Creek Mining District it has been customary from the early days of the camp to drive small development headings. Very little has been accomplished in adapting mechanical loading for this type of work.

The standard opening here for both drifts and crosscuts is 4 to 4½ ft. in width by 6 to 6½ ft. in height with slight dimensional variations. Occasionally openings up to 5 x 7-ft. are driven, while lessees sometimes make them as small as 3½ x 5½ ft. With this small size, the usual round is drilled from 3 to 5 ft. in depth with the average somewhat under 4 ft. if rock conditions permit. Seldom is it feasible to use more than a 5-ft. round while often only 2 or 2½ ft. can be pulled successfully.

Tramming distances are usually short and most tramming is done by hand. In recent years small gathering locomotives have been installed in several mines where a number of places can be served by one locomotive. Mules are sometimes used where hauls exceed 1,200 to 1,500 ft.

With conditions as above outlined, the standard heading crew has been two men: one of whom does most of the mucking and the other most of the drilling. Sometimes the drilling is done from a crossbar with two set-ups being necessary, other times a column set-up is used after mucking the back. This system has been successful in the past with reasonable progress being attained at a moderate cost. The men have been employed under contract or under wages, with the contract system being probably the most satisfactory.

Past Attempts at Mechanical Loading

Under these circumstances, attempts to introduce mechanical loading have not been entirely successful. Sincere efforts to use Finlay type loaders, and in one case a slushing system, have been made, always with the main purpose of increasing the rate of progress. It was assumed that unless more footage were attained, there would be no justification for the investment in mechanical loading equipment. This proved to be the case in the trials that were made. In order to use the loader conveniently the headings required enlargement. It followed that more muck had to be handled, more holes drilled as a result more men were needed and more explosives were used. The increase in footage obtained did not justify the increase in cost. In one case a 6 x 7-ft. transportation crosscut was driven and although a foot or two more progress was made per round, four men were needed in the crew and the cost was high by comparison with the old standard method.

The driving of the Carlton drainage tunnel proved that progress could be greatly increased by mecha-

nizing and systematizing such an operation to the highest degree. But again the cost was prohibitive for ordinary development work. Attempts were made some years ago to use Finlay type loaders in development headings with the traditional one round per shift, again with the idea of faster progress. At that time a drainage connection was being made and speed was desirable. The resulting average was over 4 ft. per round and no particular attempt was made to keep the cross-cut small. The crew consisted of three men and it is probable that the same progress could have been attained by this crew without the loading machine.

Another system of using a three-man crew and driving two headings simultaneously—blasting each heading daily—was also tried without much success. Too much shifting of equipment was necessary and the trouble involved offset the time and labor saved by mechanical loading. Then, too, the method was not popular with the men. One reason for their dislike was the difficulty of dividing the work fairly; it might have been more successful with a small tramming locomotive.

A variation of the above method would have been to drive three headings at the same time with one three-man crew, drilling, blasting and mucking two headings each shift; thus the drill runner would always have a clean set-up. This was not tried because it would have had a very limited application. It is seldom that three headings are so located that such a procedure can be used. The method of shooting more than one round per shift in the same heading, as in tunnel driving, was not tried because of ventilation difficulties.

Failure on the part of the mechanical loader in no way accounted for the unsuccessful trials described above; the loaders worked very satisfactorily. The difficulty was in the time consumed getting cars to the loader. This was aggravated by the extra rock broken in making the heading larger. The conclusion reached from experience gained in these trials was: that for the normal development heading as driven in Cripple Creek, the two-man crew without mechanical loading or tramming was the most economical and satisfactory under favorable conditions of short tramming, reasonably good ventilation, and without excessive heat and humidity.

The Portland Experiment

However, since the beginning of World War II, it has been increasingly difficult to get men to work under the conditions of hand labor necessary in the standard Cripple Creek mining system. Furthermore, in newer and deeper workings, temperatures and humidity are increasing and under these more adverse conditions it is difficult, if not impossible, for men to make the physical effort that would be normal under more favorable circumstances.

During the last year at the Portland mine an effort has been made to develop a satisfactory and economical method of driving development headings which will require less physical effort on the part of the men. The problem was approached from a different angle than previously. Instead of demanding more footage, it was decided to strive for the usual progress normally obtained with the standard method. Any additional cost would be considered as necessary to overcome adverse conditions and to keep the men on the job.

To start with, the men must be sold on the idea and be convinced that it will work for their benefit. Naturally, if the work is started with a disgruntled crew nothing will be accomplished. The simplest solution is, of course, to add a man to the crew and retain the method of hand mucking. This immediately adds 50 per cent to the labor cost. After trial of several ideas, it was concluded that any successful system, in order to compare at all favorably in cost with our old standard system, would have to meet the following conditions:

(1) It must function with a two-man crew.

(2) The heading size should not exceed 4½ ft. x 6½ ft.

(3) There must be a fair division of the work between the men.

(4) The normal cycle of one round per shift should be retained.

(5) The method must be adaptable to hand tramming under conditions where hand tramming is feasible with the old system.

Briefly, the new system must work under any conditions where the old system was used and in addition, be capable of use under adverse conditions of heat and humidity.

Past Difficulties of Mechanical Loading

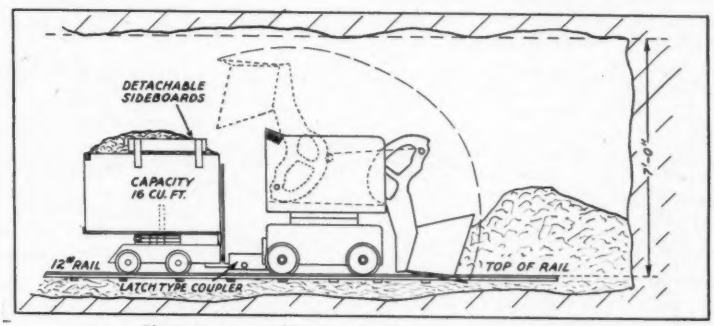
In previous attempts to use mechanical loading, some of the objections were:

(1) Headings were enlarged too much.

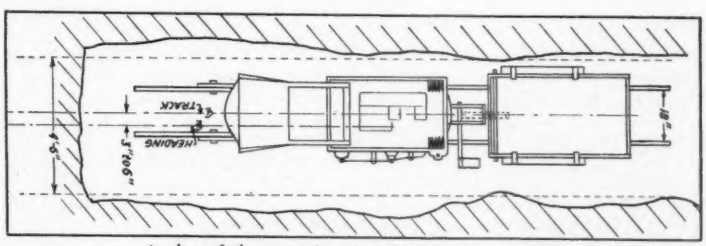
(2) It was difficult to make sharp turns.

(3) Too much time was consumed in mucking and tramming chiefly because of tramming delays. The cars were loaded fast enough but there was considerable delay between cars.

(4) In very hard or difficult breaking ground, insufficient time was left for drilling even when mucking was complcted in reasonable time. In our present attempt at improvement, these problems have been solved, at least in part: The headings are now driven as small as 4½ x 7 ft., although 5-ft. width is preferable. To permit operation of the loader in this space, the centerline of the track is kept 3 to 6 in. to the right of the centerline of the heading. The loader, an Eimco-Finlay 12B operating on 18-in. gauge track, is run without the operator's platform. The ar-



Clearance in a 4½ x 7-ft. heading using a 12B loader



A plan of the same heading showing track position

rangement is satisfactory although occasionally it is a close fit if there are projections on the left hand wall.

Avoiding Sharp Turns

To get around the difficulty of sharp turns, several schemes are used. When possible, turns are planned in advance so that they can be made over two or three rounds. If this is not possible and a sharp turn must be made, as in the case of a tortuous vein, part of the muck must be handled by hand shoveling into the loader bucket. This may cause too much delay to permit completing the round. However, arrangements can often be made on these days for the crew to put in a prospecting raise round, or slabbing round, or to do some other work which can be completed in a limited time. There is usually something of this nature to be done in the workings just driven. Thus the crew can take more time to clean up the heading without missing out on a round of blasting.

If either of these schemes is not feasible, an extra man is added to the crew for a day or so. This enables the crew to get the muck cleaned out in time to avoid missing a round. When using three men it is sometimes simpler to move the loader out of the way after cleaning up the rock that can be easily handled. In case too much work is required to move the machine to a siding, the muck which cannot be reached with the loader is shoveled by hand into the bucket.

Tramming With a Siding

A round of muck runs from 12 to 15 cars of 16-cu. ft. capacity. These must be trammed by hand 500 to 1,000 ft. One man operates the loader and trams to the nearest siding, a distance preferably of not over 250 ft. The other man trams from the siding to the shaft or other gathering point, a distance of some 400 to 800 ft. This division works fairly well within these distances. When he has the shortest tram, the loader-operator can usually load a car and get it to the siding before the trammer can get out and back. As the loader-operator's tram lengthens there is less difference. We are using at present a variation suggested by the crew which is a time saver in the loading cycle and which they prefer. It is usable only where there is a siding close to the heading in which there is room for most of the empty cars needed to hold a round of muck. The crew, working together, trams in the empty cars to the siding at the end of the shift in preparation for the next day's loading. This is done after the round is ready for blasting; there is usually a half hour or so to do this conveniently. During the loading cycle the trammer takes out the loaded cars but does not have to push in empties. Three or four minutes per car, or a total of as much as 60 minutes, is saved during the loading cycle when time is most valuable. The total amount of work done is just as much—if not a little more—than that accomplished by tramming the empties one by one during the loading cycle. The men prefer it, however, because they feel less rushed if they have a little more time to drill the round and the work of tramming is divided.

A "cherry picker," portable switch, or similar contrivance for switching cars has not been tried in this experiment. It might be useful in cases where a suitable siding is not wanted. The method of tramming empties in at the end of shift will not work with this equipment. The usual auxiliary equipment is used such as slide rails for advancing the track as mucking progresses; special couplings hold the cars to the loader.

Reduction of Drilling Time

Drilling time is cut down by the use of a 3½-in. automatic drifter. Because the men work together in drilling, the weight of the equipment is not a handicap. In some ground the heavy drifter is not essential and a 3-in. drifter has been used but, as a rule, the men prefer the larger machine.

On the whole the experiment has given satisfactory results under our conditions. One of its chief advantages, other than the elimination of some hard labor, is that of fair distribution of work. This is especially true if the men will share in the operation of the mucker, as well as the drilling and tramming. Trained men are necessary but it is no more difficult to train them for this system than for any other. We have found it easier to train a man to operate a mucking machine than to run a drifter properly.

The problem of getting around sharp turns with a loader is not really solved and so far we have only improvised some means of combating the trouble.

A time study shows the following:

Mucking—2½-3 hrs.

Installing track and pipe and setting up drill—½-1 hr.

Drilling—2½-3 hrs.

Tearing down and loading—½ hr.

Tramming empties—½-¾ hr.

Average footage—3.59 ft. per round.

The additional cost under this system, over and above the cost under our traditional hand method, consists of power, repairs and investment cost of the loader. This is certainly less than the 50 per cent increase in labor cost incurred by adding a third man to the heading crew.

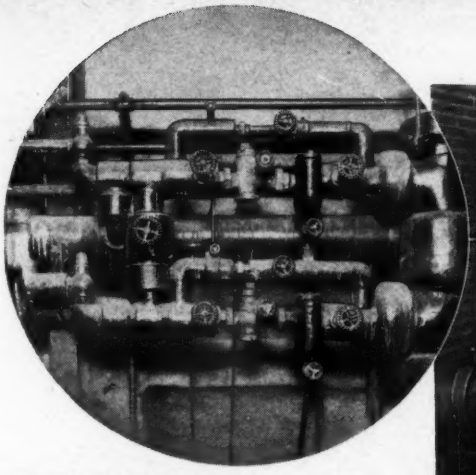
Research Needed in Small Heading Development

The method has possibilities for further development. In certain cases, particularly where the tram is long and/or otherwise difficult, or where a suitable siding cannot be located close to the working face, the installation of a small tramming locomotive might make possible the retention of a two-man crew. Use of a portable switch or similar device would also be advisable under these conditions. However, in most cases, addition of a locomotive would probably increase the cost too much to justify its use for one heading only. One of the new drill carriages might be successfully adapted for small headings, thus permitting a still further reduction in hand labor. A round consists of from 20 to 28 holes in the rock we are driving in. The 3½-in. automatic drifter will drill a hole as much as 1½ minutes faster than the smaller machine with a saving of perhaps as much as 40 minutes in a shift. The saving in time is often quite valuable if there have been delays in other portions of the cycle.

A new design of loader might be feasible. By cutting down the overall width and perhaps the height of the present small machine, the loader would be easier to handle in a small heading. There is also a possibility of changing the design so as to permit operation around sharper turns. This, however, is a problem for the manufacturer. The production of special machines for a limited application might not be economically feasible.

In any case, a method which will help to eliminate any of the hard labor ordinarily attached to this type of mine work is probably worthy of development.

"Maybe you'll remember tomorrow to buy a bulb for the lamp"



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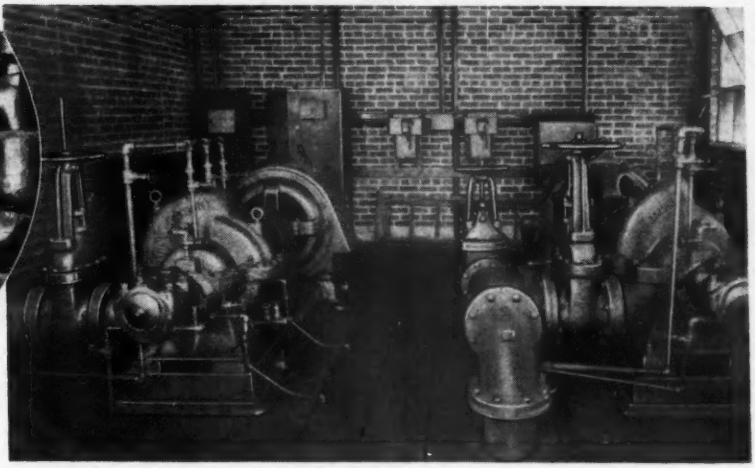

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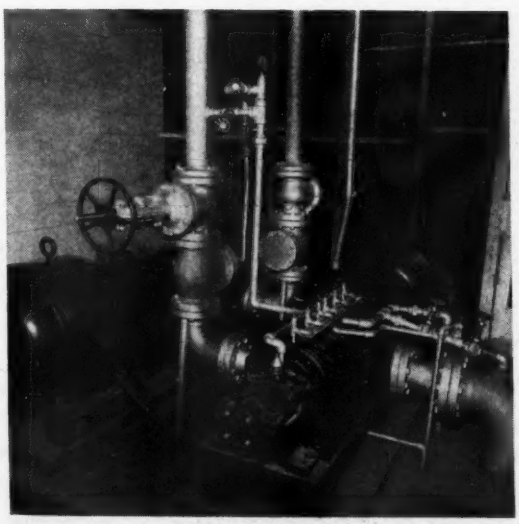

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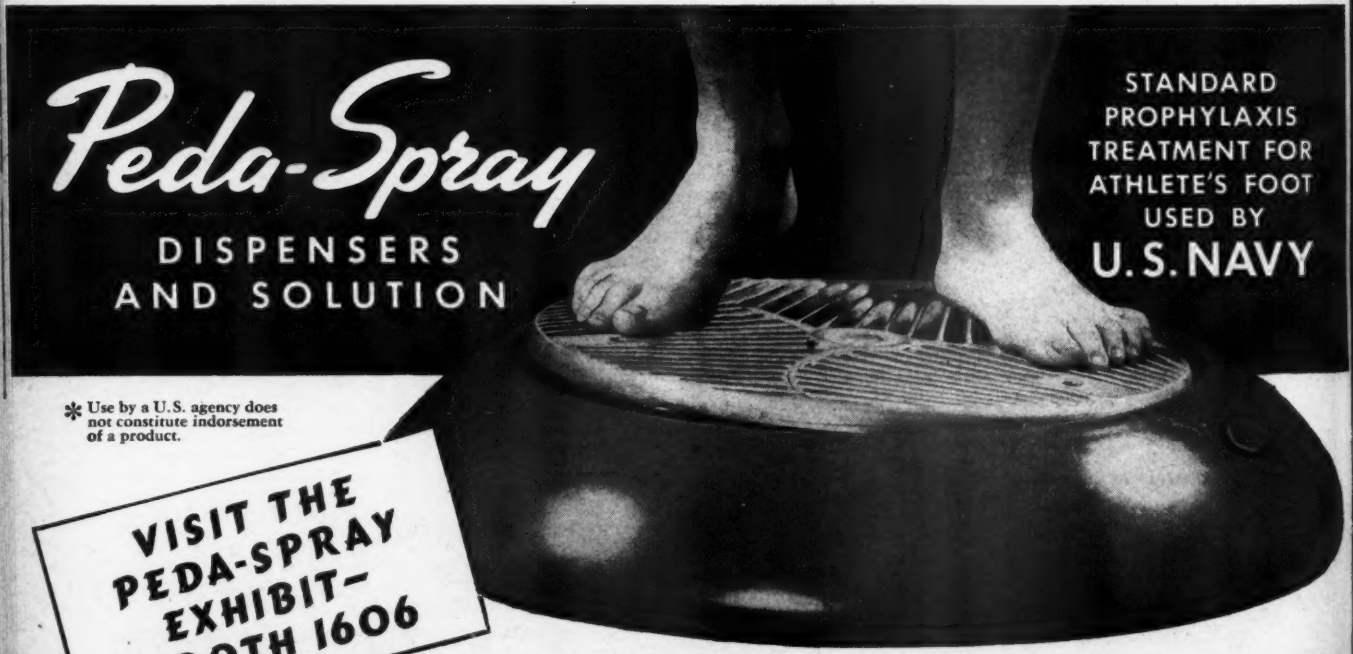

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WHEELS OF GOVERNMENT

As Viewed by A. W. DICKINSON of the American Mining Congress

HARD work in the committees and on the floor in both the Senate and House chambers is moving a volume of legislation toward the adjournment goal now set for late June or early July. Appropriations bills are being spurred along and substantial cuts in amounts requested are the order of the day.

Despite the battle in the Senate-House conference over the $4½ billion to $6 billion cut in the Administration's $37½ billion budget, the Senate Finance Committee under Chairman Millikin of Colorado will soon open hearings on the House-approved Knutson individual income tax reduction bill. This measure provides a 30 per cent reduction in taxable incomes up to $1,000; a 20 per cent cut on those above $1,000 up to $302,000, and a reduction of 10.5 per cent on that portion of taxable income in excess of $302,000. There is opposition in the Senate to permitting the bill to be retroactive to January 1, 1947, the upper chamber being more inclined to July 1 as the effective date for tax reduction.

Meanwhile Congress has approved termination of OPA and CPA by June 30 and many wartime controls were permitted to lapse March 31. These include the President's unlimited authority to ration and allocate scarce materials, the Selective Service Act, Solid Fuels Administration, inventory controls, and authority over trucking and shipping lines.

Labor Bills to Be Debated

Floor debate is expected to begin April 14 on the House Labor Control bill, restricting the closed shop, industry-wide collective bargaining and "welfare funds." New mediation and conciliation machinery is provided separate from the Department of Labor, with cooling-off periods up to 75 days during efforts to bring about peaceful settlement of disputes. Foremen and supervisory employes would be excluded from the Wagner Act. The right of free speech with their employes would be restored to employers. Employers would be given the right to discharge and replace employes who strike in violation of their contract, and unions and employes in violation of unfair labor practice provisions would be subject to judicial restraints and loss of Wagner Act protection; this would apply to violence, seizure of property, secondary boycotts and jurisdictional strikes.

Prompted by the desire to curb the national telephone strike, the House Committee on Education and Labor has reported a measure, referred to as a "quickie" bill, under which the President would order the Attorney General to secure an injunction in Federal District Courts against a strike threatening or affecting the public health, safety, or interest. Conciliation periods and the taking of secret ballots on the employer's settlement offer and, if necessary, on the subsequent recommendation of a Special Advisory Settlement Board, give play to the effect of public opinion. The committee report which accompanies the bill calls attention to the imminence of a nation-wide coal strike July 1 and states that this bill would give the President power to enjoin such a strike.

Floor action on the Senate Labor Control bill is slated to begin around April 22, and a firmer attitude on the part of members of the Senate Committee on Labor and Public Welfare has been indicated in recent days. The committee is now working on a 56-page draft of the bill but it is too early to anticipate the provisions that will be carried in the final draft to be reported to the Senate.

Designating the present draft as "completely tentative," Chairman Robert Taft states that the main purpose is to restore justice in relations between employers and employes, and in relations between unions and individual employes. He said that the secondary purposes are to give unions a degree of responsibility equal to the power which they have acquired, and to prohibit irresponsible and unfair practices on the part of the unions, including secondary boycotts, jurisdictional strikes and strikes in violation of contracts.

The present telephone strike and the thinly-veiled coal strike, precipitated by the "mourning period" following the Centralia disaster, are believed by some observers to be stiffening the resolve of Congress to take definite action on labor controls. Likewise the Supreme Court's 5 to 4 decision that employers must bargain with foremen's unions in the Packard Motor Company case has shocked everyone who understands industrial operations and the need for a clear-cut delineation of management functions.

Coal Industry

The suspension of production contemplated by the UMWA on April 1 was blocked by the Supreme Court decision of March 6, and John L. Lewis on March 19 notified Interior Secretary Krug that his strike notice of November 15, 1946, "is hereby unconditionally withdrawn". The Supreme Court had ruled: (1) that

Washington Highlights

CONGRESS: Getting action on many bills.

TAX: Knutson bill cuts individual tax.

LABOR BILLS: Floor debate due soon.

COAL: Work stoppage still a question.

PORTAL-TO-PORTAL: Will White House veto?

RUSSELL BILL: House subcommittee approves premium payments.

COPPER: Import tax suspension imminent.

POTASH: Industry criticizes new regulations.

STREAM POLLUTION: Barkley-Taft bill active.

the Federal District Court had been correct in finding Lewis and the Union guilty of both civil and criminal contempt; (2) that Lewis must pay the $10,000 fine assessed by the lower court; (3) that the UMWA fine of $3.5 million imposed by the lower court be reduced to $700,000, providing the Union complied with the lower court's order within five days after the Supreme Court's mandate was issued, but with an additional fine of $2.8 million if the Union did not comply; and (4) that the Norris-LaGuardia Act does not apply to the Government.

Chief Justice Vinson declared the Union's action in disobeying the lower court's order "such a serious threat to orderly constitutional government, and to the economic and social welfare of the nation, that a fine of substantial size is required in order to emphasize the gravity of the offense of which the Union was found guilty." On April 10 the Federal District Court considered the request of the UMWA, that the contempt fine be reduced from $3.5 million to $700,000 as required by the Supreme Court. The judge postponed his decision to April 24, on request of the Government and said he thought return of the $2.8 million should be put off until July 1, the date on which the bituminous coal mines will automatically return to private possession. The judge indicated his distaste for Lewis' public statement that a "yellow dog" injunction had been issued by his court, saying "These remarks indicate an utterly contemptuous attitude toward the court order and that he will go as far as he dares to disobey them."

The loss of 111 coal miners in the Centralia, Ill., mine explosion played directly into John Lewis' hand in his admitted war with Secretary Krug. Lewis charged negligence in the enforcement of the safety provisions of the Krug-Lewis agreement of last fall and at a series of hearings called for Krug's removal from office. Lewis called a "mourning period" beginning April 1 and instructed his membership not to return to the mines until they had been certified as safe under the safety code provided in the agreement. This action resulted in a shutdown as of April 7, not only of the 518 mines declared by Krug to be in violation of the safety code, but of nearly all the bituminous mines in the country. Operation of the properties is being gradually restored as they are pronounced safe by the managements and the Safety Committees and by U. S. Bureau of Mines inspectors.

During a hearing granted to Lewis before a House Labor Subcommittee on April 3, the mineworkers' leader urged prompt enactment of legislation making it mandatory for Federal mine inspectors to close coal mines found to be violating the Federal Code of Standards. A subcommittee member asked Lewis if the safety Code should not include penalties for failure to enforce safety. Sensing that his own mineworkers would be penalized under such procedure, Lewis evaded by replying that this would be a matter for the judgment of Congress, but that in his opinion criminal provisions in the code would bring resistance from the industry and would not necessarily increase safety.

Lewis at no time endorsed the bill introduced by Representative Landis (Rep., Ind.), revising the Coal Mine Inspection Act of 1941. The bill would make it unlawful for any coal mine owner or operator to: (1) knowingly operate any mine which is unreasonably hazardous to workers therein or which does not meet safety standards established by the U. S. Bureau of Mines; (2) allow any miner or other person to enter a coal mine or portion thereof which is unreasonably hazardous, except for inspection, maintenance or correction of hazardous conditions; (3) permit the use of any machinery, equipment, explosives or mining methods not meeting safety standards of the Bureau of Mines; (4) knowingly permit the existence of any unreasonably unhealthful conditions in any coal mine.

As a point of particular interest, the bill makes it unlawful for any miner to: (1) use equipment, machinery or explosives not meeting Bureau of Mines safety standards when the mine owner or operator is ready to supply approved equipment; machinery or explosives; (2) use equipment, explosives or machinery supplied by himself which do not meet safety standards if he is permitted by the mine owner or operator to use those which comply with such standards; and (3) use mining methods which are unreasonably hazardous or do not meet safety standards if he is permitted to use methods which comply with such standards.

The Director of the Bureau of Mines is to prescribe minimum standards of safety and health governing timbering, methods of mining, ventilation, prevention of gas or dust explosions, machinery and equipment, composition and use of explosives, and proper inspection.

Penalties for violation of the Act include a fine of $500, six months' imprisonment, or both for a miner, and $5,000, one year's imprisonment, or both, for an owner or operator. A violation continuing for more than 30 days after notice would constitute a new violation for each day of continuance. An owner or operator continuing in violation more than 60 days after receipt of notice could be enjoined from further violation by a Federal District Court.

Portal-to-Portal

Senate and House conferees have not yet reported on the portal-pay legislation. The Senate approved the Donnell-Wiley bill March 21 by a vote of 64 to 24 and sent it to conference with the Gwynne bill, which the House had passed February 28 by a vote of 345 to 56. The Senate measure had been rewritten but is still less definite and considerably more complicated than the Gwynne bill. An amendment by Senator Wherry (Rep., Nebr.), was included under which employers would be protected against claims arising heretofore as well as hereafter, which are predicated on any act done or omitted in good faith in reliance on written rulings of the Administrator.

Meanwhile the Sixth Circuit Court of Cincinnati has dismissed the Mt. Clemens Pottery Company case "with prejudice in any renewal" of appeal. This kills the case which brought the avalanche of travel-time and portal-to-portal suits aggregating around $10 billion.

Russell Bill

The House Mines and Mining Subcommittee of the Public Lands Committee has approved the Russell (Rep., Nev.), bill, H. R. 2455, discussed in previous issues. The measure would continue premium payments on copper, lead and zinc, with maximum payments based on a return to the producer of 18 cents for lead or zinc and 28 cents for copper (except where special consideration was extended), and would permit similar payments on other strategic and critical minerals. The subcommittee limited the authorization for premium payments to five years, expiring June 30, 1952.

At a subcommittee hearing on April 8, Undersecretary Oscar Chapman of the Department of the Interior modified the Department's previous position on the bill and suggested that if the Congress should deem legislation of this type necessary, payments be limited to a specific time, perhaps to June 30, 1948, and limited to copper, lead and zinc. As an additional suggestion, Chapman advised that the term "reasonable profit" he defined, as an aid to determining administrative standards upon which to base rates of premium payments.

The Senate has indicated a change of attitude toward subsidy payments in its recent passing of the wool subsidy bill, extending payments to December 31, 1948.

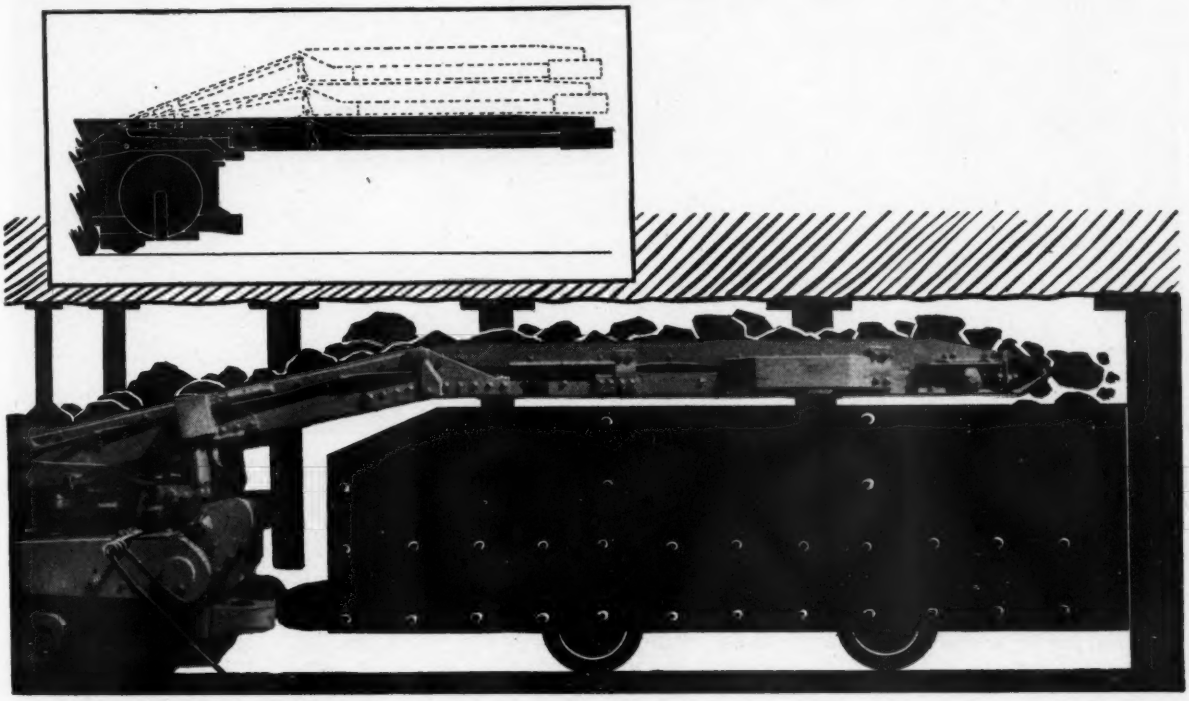
Copper Import Tax

The Senate Finance Committee has reported the House-approved suspension of the import excise tax on copper to March 31, 1949, approxi-

(*Continued on page* 109)

LIMITED HEAD ROOM

—Another reason why you need the WHALEY "AUTOMAT"



If your head room is limited, you can load cars having the greatest possible capacity and load them heavier, with the Whaley "Automat." Only the "Automat" gives you the advantage of the Parallel Lift Rear Conveyor . . . the conveyor that, regardless of height of car, is always parallel to track and top of car, for its full length extending over car. Hydraulic controls place the conveyor at proper height but the parallel feature is automatic.

This feature of the "Automat" is a very definite advantage in many installations. A glance at the detail illustrations above show how it may be valuable to you. In addition, the wide conveyors on the "Automat" give you maximum capacity at a speed which avoids excessive wear. And remember, "Automat" conveyors and shovel loading head will handle, in their stride, any lump of coal that will pass thru your tipple, or any lump of rock your cars, aerial tram or larries can take. Myers-Whaley Co., 129 Proctor, Knoxville 6, Tenn.

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Mechanical Loaders Exclusively For 39 Years

MEET A FAST-WORKING, HARD-SLUGGING NEWCOMER

You'll find the WPM Drifter, newest of the famous Blue Brutes, has the speed, punch *and balance* of a real champion — at all weights. Look at a few of the features that give it "the edge" over the field:

All moving parts of the Pneu-Motor feed are enclosed in oil and consolidated in the Drifter, making a single compact unit . . . Simple spur gears, instead of old-fashioned internal or planetary types . . . No ratchets, pawls or springs . . . Only one air hose . . . Pneu-Motor easily dismantled without taking Drifter apart . . . *Standardized mountings take all three sizes of WPM Drifters.*

These design advantages are making good in a big way. Reduced weight of each unit makes handling easier, while the balanced feed lessens recoil and provides smoother action. This better balance also relieves stress and wear on the guide shell, stops excessive vibration and whipping. Control is easier, because feed and drifter controls are both located on the end of the drifter.

Here's unbeatable performance that pays off in faster drilling cycles, more footage with less effort, and all-around operating economy. That goes, too, for the other new Blue Brute Drifters — the WPMS (Pneu-Motor on shell) and WHC (Hand Crank) types. Each type comes in three cylinder sizes — 3", 3½" and 4" — covering the whole range of drifter jobs, yours included, in a way that proves *there's more worth in Worthington.*

Write for literature describing the complete line of BLUE BRUTE Mining Equipment, including Drifters, Stopers and Hand Held Drills. H7-1

BLUE BRUTE STOPER

Self-Rotating Model WR-31 is well balanced, easily handled, and has many features that make it attractive to miners. Fully described and illustrated in Bulletin H-1200-B30.

Get more WORTH from air with WORTHINGTON

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Semi-Portable Compressors. Drifters with Feed Motor Incorporated. Drifters with Feed Motor on Shell. Hand-Crank Drifters. Stopers. Hand-Held Rock Drills.

WORTHINGTON

Worthington Pump and Machinery Corporation. Worthington-Ransome Construction Equipment Division Holyoke, Mass.

Personals

W. L. Zeigler and Fred Pringle, of the Hecla Mining Company, have been employed by the Newmont Mining Company and the French firm of Societé des Mines des Zellidja to design and construct a modern 1,000-ton capacity sink-and-float milling plant on an old mining property in French Morocco, not far from Oran.

David F. McKenzie was recently elected president of the Pittsburg & Midway Coal Company of Chicago, Ill. This company is planning to handle the output of the Colonial Coal Mining Company's new mine at Madisonville, Ky.

Henry L. Gardner has been named managing agent for the Guy Atkinson Co., who have the contract to manage the Basic Magnesium plant at Gabbs, Nev. He replaces **J. G. Brown,** who was manager for the J. M. Montgomery Co.

George H. Love, president of Pittsburgh Consolidation Coal Co., Inc., of Pittsburgh, Pa., has been appointed by Secretary of Commerce Harriman as a member of the business advisory council to his department for the year 1947.

George B. Botsford, mining engineer and geologist, is opening a consulting practice in Phoenix, Ariz. For 36 years Botsford was associated with the Colorado Fuel and Iron Corporation, but during the war he was engaged in the search for strategic ores in the East.

Rowland E. Powell, formerly an engineer for Consolidation Coal Company at Jenkins, Ky., is now employed in the Island Creek Coal Company's engineering department at Holden, W. Va.

K. J. King was recently appointed manager of the Denver branch of the Western Machinery Company. Prior to joining the armed forces in 1943, King had spent 10 years in equipment sales work in San Francisco and since the war he has been assistant sales manager and office manager of the company's San Francisco sales office.

Harold Maryott has been appointed general superintendent of the Comstock Extension Mining Company, which is operating the Irene mine near Globe, Ariz. Maryott was formerly chief mining engineer for Miami Copper Company and its subsidiary, Castle Dome Copper Company.

J. W. Barton, of Rosslyn, Va., has become president of the Atlantic Smokeless Coal Company located at Asco, W. Va., succeeding **Norman W. Lee.**

R. C. Allen, executive vice president of Oglebay Norton & Co., Cleveland, Ohio, and one-time vice chairman of the War Production Board, has been named president of the board of

trustees of Battelle Memorial Institute, Columbus, Ohio. Mr. Allen replaces **J. Clare Miller,** former vice president of the American Rolling Mill Company, who will continue to serve as a member of the board.

Andrew Fletcher, president of the St. Joseph Lead Company, New York, has announced the election of **F. F. Colcord,** vice president, U. S. Smelting, Refining & Mining Company, New York, as trustee of the Industrial Hygiene Foundation.

Houston Graham, formerly mine foreman of the Brule Smokeless Coal Company's operations at Otsego, W. Va., has been made mine superintendent. He replaces Thomas Caundell, who formerly held this position.

J. W. White, for many years district manager of the Scranton office of the Jeffrey Manufacturing Co., has retired after 38 years of service with the company. He will be replaced by **P. J. Horrigan** as district manager of the Scranton office. Horrigan has been with the firm for 11 years and has had extensive experience in mining and mining equipment work.

D. N. Vedensky, of Berkeley, Calif., has been retained as consulting engineer by the M. A. Hanna Company to conduct a program of metallurgical research in connection with the beneficiation of iron ore. The studies of beneficiation methods for various grades of iron ores are already in progress in the laboratories of the Pan-American Engineering Company at Berkeley, Calif., where Mr. Vedensky has been chief metallurgist since 1932. Establishment of a new metallurgical laboratory and research group under his direction at Hibbing, Minn., to study quality control at the beneficiation plants of iron ore mines under Hanna management, is planned for later in the year.

G. M. Rigg was recently appointed vice president and general manager of the Weirton Coal Company at Isabella, Pa.

The resignation of **Howard J. Thomas** as area distribution manager of the Solid Fuels Administration's field office at Birmingham, Ala., was recently announced by Deputy Administrator Dan H. Wheeler. His place will be taken by **Thomas B. Long,** who has been serving as field distribution representative at the same office.

B. F. Murphy, assistant manager of the St. Joseph Lead Co., at Bonne Terre, Mo., was recently appointed manager of the company's operations in that area. He replaces **L. T. Sicka,** who recently attained retirement age.

At its recent meeting in Cincinnati the Coal Producers Committee for Smoke Abatement unanimously elected **Henry Hebley,** of Pittsburgh, as the vice chairman of the organization.

H. J. Fraser and **H. J. French** were recently elected vice presidents of the International Nickel Company, Inc., as announced by Robert C. Stanley, president. Mr. Fraser has been assistant vice president since June, 1943. Both he and Mr. French are assistant vice presidents of the International Nickel Company of Canada, Ltd., the parent company.

Howard W. Adam has been named to the staff of Battelle Institute, Columbus, Ohio, where he will be associated with its minerals research division.

Harmon C. Ray has been appointed chief combustion engineer of the coal department of the Cleveland-Cliffs Iron Company. Ray has been with the Carter Coal Company during the last 10 years.

Robert D. Rothenberry, of Roanoke, Va., has become affiliated with the industrial engineering department of the Island Creek Coal Company at Holden, W. Va.

Peter Colefax, former executive vice president of the American Potash and Chemical Corporation, was recently elected president. An executive of the company since 1935, Colefax succeeds **Frederic Vieweg**, who resigned after 28 years with the company. Mr. Vieweg will continue as a director and consultant.

Wendell T. Robie, chairman of Western Mining Council's public lands committee, Auburn, Calif., has been reappointed a member of the State Board of Forestry by Gov. Warren.

John E. Miles has joined the engineering staff of the West Virginia Engineering Company, located at Charleston, W. Va.

Jack Lee has been named superintendent of the Goldroad mine at Goldroad, Ariz. He replaces **Guy Gardner** who has been in charge for several years but who was forced to retire because of ill health.

Consolidation Coal Company of Kentucky has announced that **Milford Conley**, who has served the company in various capacities underground over a period of several years, has been made section foreman at Mine 206.

Wilson D. Mitchell, chief geologist for the Magma Copper Company at Superior, Ariz., left recently for Morocco, North Africa, where he will be engaged on special mine examination work

Randolph F. Harris has joined the Exton Chemical Division of Foote Mineral Company, Philadelphia, as chemical engineer. Previously, Harris was connected with Pittsburgh Coal Co. and the Reade Company, where he was in charge of building the plant, installing equipment and developing processes used in grinding magnesium.

Felix Edgar Wormser has resigned as Secretary and Treasurer of the Lead Industries Association to accept an appointment as Assistant to the President of the St. Joseph Lead Co. on May 12, 1947.

Fred C. Helton, formerly maintenance repairman of Clover Splint Mine, of Consolidation Coal Co., at Jenkins, Kentucky, was recently made maintenance foreman.

The retirement of **Fred Knight**, of Ishpeming, Mich., formerly superintendent for the Oliver Iron Mining Co., was recently announced. Mr. Knight will take up residence at Iron Mountain, Mich.

Rufus Harvey Sargent, topographic engineer for the U. S. Geological Survey, was retired on March 31, after 52 years of service. Until his appointment as Chief, Section of Inspection and Editing in 1937, he was topographic engineer for the Alaskan Branch of the Survey.

W. T. Stratton has been appointed Director of Purchases of the Wickwire Spencer Steel Division of the Colorado Fuel and Iron Corporation and will be located at the Curtiss Building, Buffalo, N. Y. He will replace E. A. Johnston who has resigned.

The new appointment of State Inspector of Mines for New Mexico has been announced by Gov. Thomas J. Mabry. **John A. Garcia**, of Madrid, Santa Fe County, who for several years has been serving with the U. S. Bureau of Mines Safety Division, will succeed Warren C. Bracewell, deceased, who held the position for 22 years. Continuing as Deputy State Mine Inspectors are Bert Bethel of Albuquerque, and Alphonso Trujillo, Raton, Colfax County.

The appointment of **William V. Burger** as registrar and director of admissions at the Colorado School of Mines has been announced by Dr. Ben H. Parker, president of the school. Mr. Burger assumed his new duties March 17.

— *Obituaries* —

Carlos Whitney Van Law, 73, mining engineer with the Vanadium Corporation of America, New York, and vice president of its subsidiary, Rhodesian Vanadium Corporation, died late in February, after a brief illness, at his home in Pelham, N. Y. Following his graduation from Cornell University in 1896, Van Law was engaged for many years in extensive mine work for Mexican, Central American and South American enterprises and, after joining the Vanadium Corporation of America in 1942, he made a survey of their chrome mines in southern Rhodesia.

William G. Shields, secretary of the American Smelting and Refining Company, died of a heart ailment recently at his home in New York City, after a brief illness. Born and educated in Hamilton, Ont., Mr. Shields had been associated with the American Smelting and Refining Company for 40 years.

Robert Walker Salisbury, retired mining engineer and native of Salt Lake City, died of a heart ailment recently at his home in San Mateo, California. Born in Salt Lake City in 1884, he graduated from Cornell University with a mining engneering degree in 1908. For several years he was president of the Salisbury Investment Co. in Salt Lake City and during World War I, he was a captain in the infantry.

Willard E. Hales, former superintendent of the Treadwell Yukon Mining Co., at Tonopah, Nev., died recently at his home in Los Angeles at the age of 65. Since 1930 he has been engaged in consulting work out of Los Angeles with the exception of time spent with Basic Magnesium at Henderson, Nev. Mr. Hales was instrumental in bringing about the sale of the Golden Queen at Mojave in 1935.

Jack Wilson, who was well known throughout the mining industry in the Northwest, died recently after a short illness at the age of 59. Mr. Wilson first came to Seattle in 1905 from his birthplace in Lawrence,

Kans., and except for several years in Alaska, where he was engaged in mining, he lived his entire life in Seattle. He was well known as a wire rope engineer in Western United States and Alaska and since 1920 was associated with John A. Roebling's Sons. For many years he was branch manager of their Seattle office.

Michael A. Eiben, president of the Northern Blower Company died recently at his home in Cleveland, Ohio.

Wells L. Brimhall, 64, prominent mining operator and broker, died during February at Provo, Utah. Long associated with mining operations in Utah and other western states, Mr. Brimhall was also prominently represented in financial circles in Salt Lake City.

NEWS and VIEWS

The lens of the Westinghouse fixture recessed in the pit wall directs light from a 150-watt lamp to the underside of the cutter at the Jones & Laughlin Vesta No. 4 mine. Routine inspection and maintenance is speeded by this procedure.

Eastern States

New Fuel Project

PITTSBURGH Consolidation Coal Company announced plans on March 25 for a research and development program which it is believed will lead to the creation of a new multi-million dollar fuel industry. The aim of this program is to perfect commercial processes for making gasoline and a gas fuel of high heat value from bituminous coal. Commercial gasification and liquification plants costing as much as $120,000,000 per unit may result from this project.

In explaining the company's plans for pushing this development, George H. Love, president, said:

"A program of this magnitude requires careful analysis and long range planning of the major steps involved. It can be said that step number one has already been taken. This covered the original survey and the fundamental laboratory studies and blueprinting of a pilot plant for the gasification of coal.

"The second step, which we are about to take at this time, is the construction of the pilot plant. Following a year or more of experimental operation of the small-scale plant will come the preparation of plans for financing the large commercial project. This might be done as a joint undertaking by industries closely interested in such an operation, or through some form of public financing.

"The final step," Mr. Love said, "would be the construction and eventual operation of the commercial plant."

The revolutionary program is being pushed in collaboration with the Standard Oil Development Company, central technical organization of Standard Oil Company (New Jersey), which has an extensive background of research on this and related subjects. Arrangements have also been made to contribute to the studies of Hydrocarbon Research, Inc., headed by P. C. Keith, which is also engaged in research on the gasification and liquification of coal.

Joseph Pursglove, Jr., vice president in charge of research and develop-

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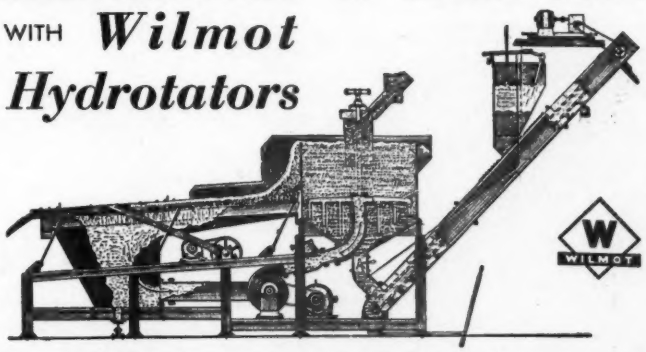
GREATER YIELD OF CLEAN COAL

WITH *Wilmot Hydrotators*



NEW AUTOMATIC CONTROLS in Wilmot Hydrotators are effecting marked increases in quantity and quality of product. For example, loss of good coal during periods of interrupted feed is prevented by an automatically controlled valve in refuse discharge line. Let us send you complete details of the advanced engineering of Wilmot Hydrotators.

Wilmot Builds Better Breakers

WILMOT
A GREAT NAME IN THE COAL INDUSTRY

Write for Hydrotator Bulletin HR

HYDROTATOR *Preparation* EQUIPMENT

WILMOT ENGINEERING COMPANY, HAZLETON, PA.

You can stop the spreading of trouble by electrical faults in your distribution system. Sectionalize your trolley and feeder circuits with I-T-E Type KSC Automatic Reclosing Circuit Breakers.

At the first sign of overload, short circuit or other fault, the KSC automatically opens quickly to separate substations. Only the section in which trouble occurs is out of service—others continue to operate.

Then, when line conditions have been corrected, the KSC *automatically recloses* to continue the circuit and prevent prolonged interruption of mine production.

Be Wise . . .

SECTIONALIZE

Assure maximum protection of your electrical system with the I-T-E Type KSC Circuit Breaker—the breaker with the *automatic reclosing* feature.

Type KSC Automatic Reclosing Circuit Breaker Bulletin 4411 is available by writing, now, to I-T-E Circuit Breaker Company, 19th and Hamilton Sts., Philadelphia 30, Pa.

I-T-E SECTIONALIZING SWITCHGEAR

ment, reports that the pilot plant will be of "demonstration size" and will be used to perfect and commercialize processes that are already under development on a laboratory scale. It will be erected at Library, Pa., near the company's newly organized research center.

Sizable employment gains are visualized for the areas selected for locations of such huge plants upon perfection of the process. A plant producing gas in quantities equal to the output of the Big and Little Inch pipe lines would consume about 20,000 tons of coal a day. Employment would thus be provided for about 2,000 coal miners. About 2,000 persons would be required to operate such a plant, and at least 2,000 other people would be needed to supply material, equipment and supplies from the adjacent territory.

Mr. Pursglove said that "a commercial gasification and liquification plant using 20,000 tons of coal daily could create as many as 6,500 steady jobs and develop approximately $40,000,000 added annual purchasing power for the regional area, whereas pipe lines bringing gas fuel from other areas create practically no jobs or purchasing power here."

The new industry would also have an influence on other manufacturing industries which are in dire need of gas for many factory operations. "Getting coal into a form that people want to use is a job of very special importance to the Pittsburgh industrial area, since this region is both close to large, unused reserves of coal and in need of a large increase in the supply of gas fuel."

Pittsburgh Consolidation is now in the act of adding personnel to its research and development division. It is also purchasing and will install equipment so that it will have an adequately staffed and equipped research center at Library to handle the large-scale pilot plant work.

Operation of a commercial plant large enough to produce 400,000,000 cu. ft. of gas per day would require the output of at least three large mines, such as the company's new Mathies Mine. Since such a plant would use over 6,000,000 tons of coal per year and because of the large capital investment involved, a reserve of at least 180,000,000 mineable tons of coal should be available to assure operations for at least 30 years. Mr. Pursglove reports that the Pittsburgh Coal Company operating subsidiary has two large tracts with sufficient reserves to support two such plants each. One location might center around Linden, Pa., eight miles southwest of Library, and another might be around Hickory or Mendon, Pa. West Virginia and Eastern Ohio may also be considered as possible future plant sites because of the large coal reserves held by the company in those areas.

West Virginia Company Increasing Production

The Youghiogheny & Ohio Coal Co., mining the Coalburg seam at Van, W. Va., has been double shifting the mine for the past few months. Tonnage has been stepped up from 2,700 to 3,300 tons per day. Daily production is expected to reach 4,000 tons eventually. Two loaders have recently gone into production and a third is expected presently, along with two rubber-tired shuttle cars. A rubber-tired mounted cutting machine has been received and will be used with the shuttle cars.

This experimental unit will be employed on a model four-entry room-and-pillar panel section; advancing entries and working rooms turned from right outside entry on the advance; working rooms turned from left outside entry on the retreat. Double track will be carried as the entries advance, being laid in the two middle entries. Shuttle dumping points will be advanced every 300 ft. Track is to be laid past the dumping point in a U-curve, permitting haulage motors to supply empties and remove loads without interruption to the dumping of coal by the shuttle cars. These shuttles will discharge directly into the mine car from a ramp constructed at the loading point.

A Chance Cone washer is now being constructed. This will have a capacity of 4,000 tons washed coal per day of two shifts.

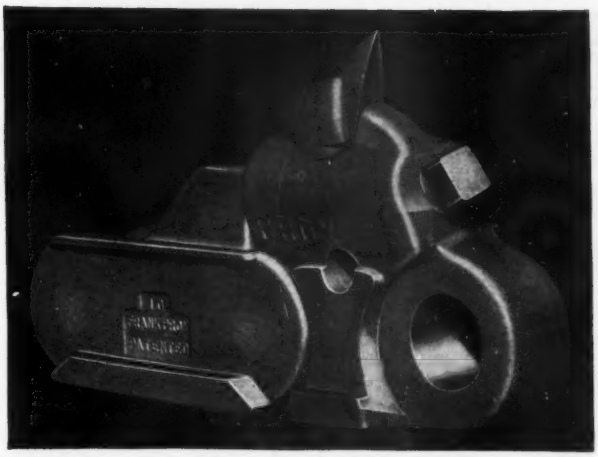
Cleaning Plant Completed

The Red Parrot Coal Company at Prenter, W. Va., has completed a new cleaning plant at the Red Parrot No. 5 tipple at Prenter and is going into production. This plant consists of a Jeffrey Baum Jig wet washer for ⅝ x 5-in. coal and a Roberts & Schaefer Stump Air Flow unit for the 0 x ⅝-in. fines. Both units are being installed by the Kanawha Manufacturing Company of Charleston. The raw coal feeds into the tipple, a part of the new installation which will have a capacity of 425 tons per hour. The Baum Jig washer is a 7-ft. wide, three-compartment, six-cell unit with a capacity of 300 tons per hour. A distinctive feature of this unit is an arrangement which permits recirculation of middlings being run through a crusher, making possible almost complete recovery of the coal. The air flow unit is of convention design and function, with a rated capacity of 75 tons per hour. The plus 5-in. product will not be washed. Cleaning plant refuse will be transferred by an overhead belt from a bin in the tipple to a slate bin on a nearby hillside.

Another novel feature of the installation is a large coal bin beneath the rails of the Chesapeake & Ohio siding serving the tipple. This will receive the entire production of the nearby No. 2 Mine, about 1,000 tons per day. This coal will be loaded run-of-mine at the No. 2 tipple and transferred to the No. 5 sidetrack, dumped and carried by belt into the No. 5 preparation plant.

The Red Parrot Coal Co. also has plans for a cleaning plant installation at the Red Cedar Mine at Keith, but these plans are as yet in the blueprint stage.

L. E. YOUNG
Consulting Engineer
Mine Mechanization
Mine Management
Oliver Building Pittsburgh, Pa.



THE INVINCIBLE TOOLSTEEL CHAIN

a product of lasting durability and efficiency, whose manufacturer is backed with over seventy years of experience in producing coal mining equipment.

See Us at the Coal Show
BOOTH 304

PROX
ON THE BANKS OF THE WABASH
FRANK PROX COMPANY
TERRE HAUTE - INDIANA.

Coal Seam Being Opened

The Princess Dorothy Coal Co., now mining the five-block seam at their Robin Hood Mine at Bandytown, W. Va., is making preparations to open the Hernshaw seam to be loaded over the Robin Hood tipple. Preliminary grading is now in progress and construction on the foundation for a 600-ton bin has been started; details for proposed tonnage are not as yet available.

Historic Jersey Iron Mines Sold

Sale of the historic Ringwood Iron Mines, Ringwood, N. J., to H. P. Moran, New York City, for $1,297,000 was announced in March by the War Assets Administration. The 31 structures and the 878 acres of land which comprise the site of the Ringwood mines was acquired by the Government in 1942, and has a reported cost, including improvements made since that time of $3,923,082.

The mines have not been in operation since 1926 with the exception of small quantities of ore brought to the surface for test purposes. Government acquisition of this property was a wartime security measure.

Iron ore was discovered in this area during the Revolutionary War days when iron from these mines was forced into the chain which spanned the Hudson River not far from West Point and prevented British ships from reaching strategic positions upstream.

Although the new owner estimates that, for a minimum of 10 years, more than 300,000 tons of ore per year can be mined from the shafts, he pointed out that before the installation can be placed in operation, the shafts must be deepened and new equipment shipped to the site. He said also that housing for labor must be rehabilitated and miners must be brought from other sections.

Heavy Media Separation

A heavy media separation plant is being built by the Sloss Sheffield Steel & Iron Co. at Russellville, Ala., to handle ore from open-cut mines at that point. The new plant, first of its kind to be erected in the South, is expected to be ready soon and will cost about $200,000. Five 15-ton diesel trucks are to be placed in service to haul brown ore over specially constructed roads from the mines.

Smokeless Heater Successful

Commercial models of the BCR Smokeless Heater, a product of extensive research by Bituminous Coal Research, Inc., and a group of 18 stove manufacturers, are undergoing practical field tests in four major cities—Chicago, Cincinnati, Indianapolis and Pittsburgh—and this fact-finding will go on during the present heating season.

"Early reports," according to James R. Garvey, BCR development engineer, who is supervising the tests, "indicate that these heaters are giving smokeless performance with high-volatile coals, trouble-free operation, and require less manual attention than conventional heaters."

In addition to its own field tests, the national research agency reports, seven of the cooperating stove manufacturers have ordered BCR Smokeless Heaters for use in their own development work and two others—The Moore Corporation, Joliet, Ill., and Oakland Foundry Company, Belleville, Ill.—have adapted the laboratory findings to commercial designs that are being consumer tested this winter.

"I can't figure out what happens to the smoke," a Pittsburgh user of BCR Smokeless Stove said. "I thought maybe it was due to the new lot of coal, so I tried some of the old coal, but got just as good results."

Another user stated that the BCR stove is giving more heat than a conventional heater of equal size formerly used. She said, "Like it? Sure we do, and we're telling our neighbors about it."

Repeated check-up calls, BCR reports, show that the heaters are easy to operate. Self-feeding is said to be good and thus far no serious mechanical defects have been encountered. However, a few design changes probably will be necessary to reduce weight, simplify assembly and insure the longest possible life of parts.

In its present size, the BCR Smokeless Heater is designed to operate for a 12-hour period without attention, yielding an average of 5,000 B.t.u. an hour. For shorter periods it will burn up to 6 lb. of coal per hour with corresponding increase in heat output.

The BCR Smokeless Heater has evolved through systematic research which began in 1941. The present design embodies principles developed for BCR at Battelle Memorial Institute, Columbus, Ohio.

Unusual Belt Suspension Bridge

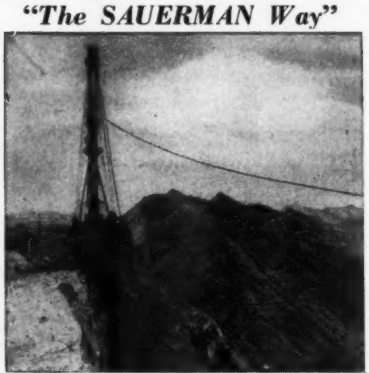
An unusual suspension bridge, designed solely to support a belt conveyor system used in a coal-mining operation, is under construction at Gary, West Virginia. The belt, designed and built by Goodyear Tire & Rubber Co., Akron, Ohio, will carry refuse from a central cleaning plant in the valley to a spoil pile over the hill 1,500 feet away and 486 feet above the valley floor. Two-thirds of the route is over the suspension bridge.

An unusual engineering feature is the use of huge steel cables curving horizontally from nearby hills to stabilize the bridge against side sway in high winds, and prevent spillage from the belt. Another safeguard against spillage will be self-aligning idlers on which the 30-in. wide belt travels. The main or vertical suspension part of the bridge will utilize three towers to support and anchor the weight-carrying catenary cables. Heretofore, long-distance belt conveyors of this type used trestles for support. Trestles were impractical in this instance, however, since the belt system will span the chasm at a maximum height of 230 ft.

The 3,000-ft. length of the belt itself, built especially for this spectacular operation, was made possible by reinforcing the carcass of the belt with steel cables. When operating at capacity, transporting hourly 350 tons of shale, rock, slate and other coal-cleaning spoil, the giant belt will exert a pull on a head pulley shaft and bearings of 30,000 pounds. Belt speed is 400 feet a minute.

STRIP MINING

"The SAUERMAN Way"



At Velva Mine of Truax Traer Coal Co., a tower machine equipped with 12 cu. yd. Sauerman Crescent scraper strips a wide cut, handles 7500 cu. yd. every 24 hours.

Sauerman Tower Machines offer an improved means of stripping large bodies of coal or ore.

On such work, the long reach of a Tower Machine enables it to make a much wider cut than is possible with other types of equipment. Not only does it make a wider cut, but at the same time it disposes of the spoil just where wanted.

These machines also are used successfully in loading loose materials from pits and in handling large stockpiles. For this type of service the head tower is equipped with an adjustable ramp.

Write for Catalog

SAUERMAN BROS., INC.

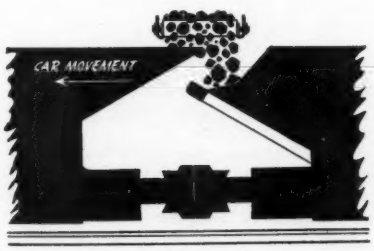
540 S. Clinton St. CHICAGO 7

HERE'S A HUMDINGER!

This S-D Automatic Bottom Dumping Mine Car has sides measuring 16 Ft. 7⅜ In. at top edge. The length over bumpers is 18 Ft. 4 In.—maximum car width 6 Ft.—height above rail 38 In.—track gauge 42 In.—capacity, with 6 In. surcharge, 256.5 Cu. Ft.

This car has the modern automatic doors with the automatic, under-the-car, unlatching device—no latch levers on end of car to give trouble—two latch hooks—one for safety—Westinghouse air brakes—overlapping ends for conveyor loading—Willison automatic couplers—S-D Floater Ball Bearing demountable wheels. If you want to know what a wonderful job this particular car is doing in actual service, write us and we will give you the name and address of the user.

Official records prove the S-D "Automatic" reduces costs of coal per ton from 20 to 50 cents as compared to either rotary or end-dump cars formerly used by mines and thrown away and scrapped for installation of S-D "Automatics." Wouldn't it tickle you to save this much on the cost of your coal? If you will write us we will go into the matter, at once, in detail. Read the next paragraph and you will see how you can make this saving per ton with practically no cash outlay on your part.



This sketch illustrates the use of overlapping ends of car for continuous loading by conveyor.

AN OUTLINE OF OUR LEASING PLAN

It will cost you, to lease S-D "Automatics," only about 2 cents per ton of coal hauled over a 15-year period. You pocket somewhere between 20 and 50 cents per ton savings. Your cash outlay is for freight on cars and storage bin. We furnish free repair parts during life of lease to replace ordinary wear and tear. At any time, you can buy the cars at a price that constantly reduces as you pay rents. This is a wonderful proposition for you. There is no chance for you to lose. Today, hundreds of thousands of dollars worth of cars are under lease and we will furnish you with the names and addresses of lessees upon request. We hope you are next on the list of lessee money makers.

DON'T MISS A VISIT WITH US AT THE CLEVELAND SHOW MAY 12-15

Sanford-Day Iron Works, Knoxville 9, Tennessee

There's smoother going — from the dummy make-up to the borehole — with Seal-Tite Tamping Bags. They're *extra-tough* to take hard handling and their *high-wet strength* and *safety-seam* keep dummies safe from breaking or splitting.

Supplies of dummies are quickly, simply made up and may be safely stored underground for long periods under wet conditions—and they'll stay in shape ready to use—in Seal-Tite Tamping Bags.

***Send for free samples to try out*—give sizes wanted or we'll send an assortment—Write now.**

SEE DEMONSTRATION IN BOOTH 121
AT THE COAL SHOW IN CLEVELAND

Tamping Bag Co.

216 SO. THIRD ST.
MT. VERNON, ILL.

New High-Speed Coal Mine Elevator

A far cry from the old-fashioned mine bucket, a modern high-speed elevator has been installed by the Otis Elevator Company in the Willow Grove Mine No. 10 of the Hanna Coal Company, St Clairsville, Ohio.

Primarily, there were two things that brought about the installation of this elevator. One, it provides an additional escape point; the other, it greatly reduces portal-to-portal time. From the original portal the men walked four miles. Now they ride the elevator 22 seconds, walk through a concrete, electric-lighted corridor, push through a revolving door, and are at the coal seam.

Incidentally, the revolving door is not a luxury item in the Willow Grove Mine, it came about from necessity. When Otis first put the elevator into operation, difficulty was experienced due to the inability of the operator to

close the hatchway doors, because of the air pressure set up by the mine's ventilating system. To overcome this trouble, the revolving door, which forms an air lock, was installed at the bottom of the shaft, and there was no more difficulty from air pressure.

The elevator, with a 3,500-pound capacity and a 500-foot-per-minute speed, has a rise of 172 ft., equal to the height of a modern 20-story building. It has collective controls, with attendant; high-speed, power operated center-opening doors, and is of all-steel construction.

The elevator installation is but a part of a general modernization of employe facilities made by the Hanna Company. In the new portal building atop the shaft is a 25-shower washroom, a dressing room that accommodates the mine's 600 employes, drinking fountains, modern toilet facilities, a lounging room, and a restaurant serving hot meals for all three shifts. Ultra-violet lamps minimize the dangers of spreading airborne cold and other germs. A dance floor and roof garden are also planned.

Ore Plant Being Moved

The Cleveland-Cliffs Iron Co. is moving its Holman-Cliffs ore washing plant a distance of two miles from its original site to a new location on the south bank of the Holman-Cliffs iron mine at Taconite, Minn. The plant is being moved piece by piece to the new site and the change eliminates a two-mile rail haul of the crude ore from the mine to the washing plant. At its new location at the Holman mine the crude ore will be delivered from the pit directly to the Holman-Cliffs washer plant by means of a belt conveyor. A crushing and screening plant will be located in the pit and tied in with truck haulage and the main belt system. The belt system is designed for two flights and the first unit is 900 ft. long, with a vertical lift of 197 ft. The second unit is 887 ft. long, with a vertical lift of 157 ft.

Coal Preparation Meetings

Carl E. Campbell, secretary of the Illinois Society of Coal Preparation Engineers and Chemists, has announced that the society meets the third Friday of each month at Benton Country Club, Benton, Ill. After the evening dinner a paper is usually presented on phases of coal preparation or chemistry. The society includes many members from the lead and fluorspar districts of Illinois and Kentucky who assist with papers and discussions from their field. Mr. Campbell has extended an open invitation to all interested to attend these meetings.

Antimony Plant Purchased

The holdings of Texas Mining & Smelting Co. were recently purchased by the National Lead Co., according to V. G. Kegler, president of the Texas concern. The Texas Mining & Smelting Co. has been one of the few operations in the country engaged in the processing of antimony and its by-products. Most of the ores originate in Mexico and are refined at a plant at Laredo, which was established in 1930 with the backing of British capital. The operation will be continued along the same lines by National Lead and Kegler will remain as manager in Laredo and Mexico. Approximately 300 persons are employed by the company in its Texas operation.

Tri-State Mill Has New Operator

Harris Mining Co. is completing the reconditioning of the old Lucky Jenny mill at Hockerville, Okla., and is expected to start milling operations the first of next month, according to Loren Keenan of Baxter Springs, who heads the company. The mill, which formerly was operated several years ago by the old Guaranty Mining & Royalty Co., was last operated by Chas. Barnett of Joplin as the Mutual Mining & Development Co. during the early part of the war. General repairs, overhauling of old equipment and installation of new, has been under way at the mill for several weeks. When completed it will have a capacity of about 25 tons an hour.

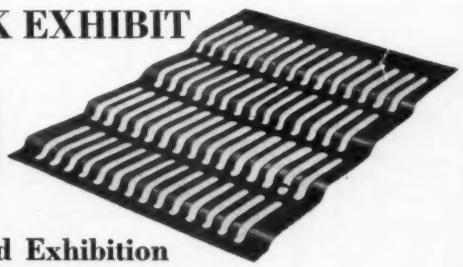
Silver Dollars in Payroll

At Charles City, Iowa, one and one-half tons of silver dollars—55,000 of the ordinarily scarce cartwheels—were launched on an experimental rolling journey early last month by the Oliver Corporation, which used the hard money to meet its weekly payroll. The unusual payoff was arranged by Geo. W. Bird, plant manager, to demonstrate the penetrating power of the payroll of the big tractor plant, principal industry in this city of 10,000, and the extent to which Charles City money spreads throughout the state.

In efforts to make the dollars roll as far as possible, promises of cooperation were obtained from Charles City merchants, banks, civic organizations and shoppers who received the silver in change.

SEE HENDRICK EXHIBIT

BOOTH 324



Coal Convention and Exhibition

FOR screening coal, Hendrick Short Slot Flanged Lip Screens are outstanding, because of their non-clogging operation, plus their accurate sizing and rapid dewatering advantages.

The Hendrick Shaking Screen, for sizing and dewatering, is the only screen with distinct shaking and whipping actions.

Hendrick Wedge-Slot dewatering and dryer screens are constructed with varied types of profile bars to suit specific applications.

Other Hendrick products for the coal industry include a complete line of perforated metal screens, elevator buckets, flights, conveyor troughs, shaker chutes and ball frames.

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● *Right* TYPE

● *Right* PERFORMANCE

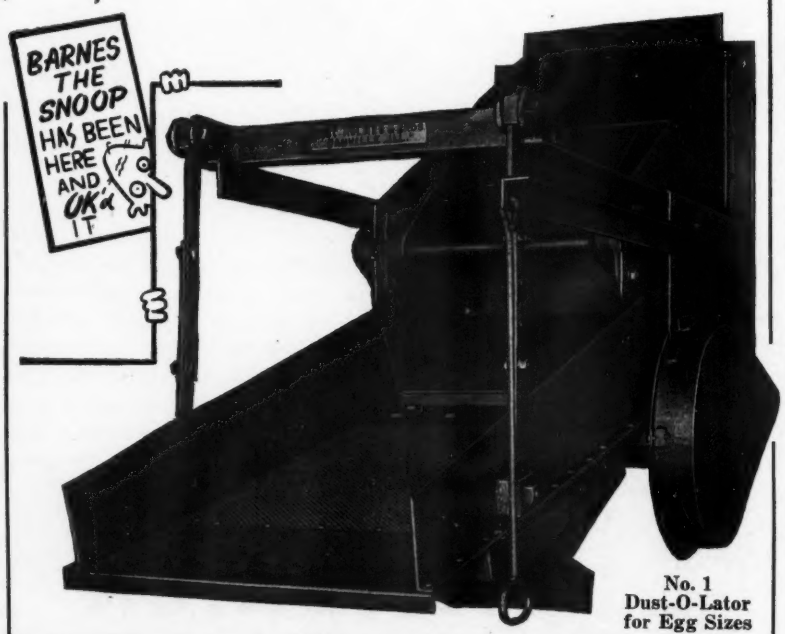
HOLMES DUST-O-LATOR is a self-contained unit combining a withdrawal gate mechanical screen and automatically controlled power unit for use in removing objectionable dust and fines from the coal as it flows to the truck.

Dust-O-Lators provide a final screening to remove such degradations as may carry over from the primary screening plant.

Dust-O-Lators are made adaptable to any type of bin. Units available for side or bottom discharge.

No. 4
Dust-O-Lator

For handling lump or run of mine sizes, consists of undercut gate operated by chain wheel. Gate passes up through flow stream assuring a positive closing of opening regardless of lump size. Gate locks in both open and closed positions.



No. 1
Dust-O-Lator
for Egg Sizes

ROBERT HOLMES AND BROS.

BINS - GATES - LOWERING SPIRALS - DUST-O-LATORS - SHAKING GATES

DANVILLE, ILLINOIS

Exploration Drilling Continues

Diamond core drill exploration is continuing at the Golden-Estes molybdenum deposit in the Magnet Cove district, Hot Springs, Ark. The M & M Exploration Corporation, of Little Rock, is engaged on this work which was started early last December for the Mo-Ti Corporation.

Large Truck to be Tested

A new truck with a capacity of about 40 tons and powered by a 550-h.p. V-12 cylinder Cummins motor is expected to be delivered shortly to the M. A. Hanna Co. for use on the Mesabi Iron Range. The truck, manufactured by Euclid, is a rear-dump type, mounted on 10 tires —two on front and eight on rear. Present truck sizes on the range have reached 30-ton capacity but this is the first attempt using a 40-ton size.

Offices to be Enlarged

The M. A. Hanna Co. is planning to enlarge their general Mesabi range mine office at Hibbing, Minn. The present engineering department is now using the former Evergreen mine office in Hibbing and the new building will accommodate the general superintendent's office, district superintendent, chief engineer, chief clerk, purchasing agent and various departmental employes.

Railroad Survey Completed

A survey from Babbitt, Minn., across Lake County to Beaver Bay, Minn., a point on the north shore of Lake Superior, was recently completed by the Reserve Mining Co. This survey is part of the preliminary plans for the building of a railroad or other type of transportation by the Reserve Mining Co. along a 40-mile route. The purchase of waterfront acreage by the Reserve Mining Co. at Beaver Bay was recently announced.

Seneca Shaft Being Reconditioned

The Seneca No. 2 shaft is being put into condition for operation by the Calumet & Hecla Consolidated Copper Co. north of Calumet, Mich. The Seneca Copper properties were purchased by Calumet and Hecla in 1945 and the No. 2 was an active producing outlet for the Seneca Copper Co. when it was operating in this region. Both the shaft and surface plant are being rehabilitated.

American Zinc Institute Meeting

The preliminary program covering the Twenty-Ninth Annual Meeting of the Zinc Institute, to be held at the Hotel Statler, St. Louis, Missouri, on April 28 and 29 was recently released.

On Monday morning, in addition to reports on the Institute's activities, the slab zinc supply at home and abroad will be discussed by T. H. Miller, Assistant Director of the Bureau of Mines. Ted Sills, public relations counsel of Chicago, will have for his subject "The Public in the Picket Line."

The Monday afternoon session will open with a review of the Washington situation by Julian D. Conover of the American Mining Congress. Specialists in each field will discuss the market outlook for zinc in all departments of use.

On Tuesday morning, Colonel O. O. Niergarth, of the Army and Navy Munitions Board, will present the subject of "Stockpiling and Industrial Planning." George C. Heikes, of Mines, Inc., will discuss the zinc ore supply, both domestic and foreign. Evan Just, Editor of "Engineering & Mining Journal," will report on the position of the industry pro and con with respect to subsidies, and J. K. Richardson, of the Utah Mining Association, will discuss "Safety and Health in the Zinc Industry."

The annual dinner and smoker will be held on Monday evening.

Iron Mine Has Outstanding Safety Record

At the Rouchleau mine at Virginia, Minn., on the Mesabi iron range, a new safety record was recently established. When the night shift went off duty on March 26, the workers in the open pit and crushing plant had totaled one million man hours without a disabling accident since December 18, 1945.

Rudolph T. Elstad, president of the Oliver Iron Mining Co., which operates the property, stated that during the period which dated from a minor accident, 3,705,000 tons of iron ore were shipped from the property. Almost one million pounds of explosives were used in the same period in blasting at the operation and about 83 per cent of this ore was handled through the crushing plant.

The mine is under the supervision of Lloyd C. Campbell and is a rail haulage operation involving the use of steam locomotives, traveling cranes, railroad ore and stripping cars. The safety director for the mine is R. F. Wilson. Through the organization of a safety department to emphasize to workers the advantages of regulated safety practice the Oliver Company has established an unusual record by reducing the number of lost time accidents by 85 per cent during the last 25 years.

Cardin Tailing Mill Closed Permanently

Announcement has been made of the permanent closing of one of the oldest tailing retreatment plants in the Tri-State mining field—the No. 2 mill of the Cardin Mining and Milling Company. The plant had been operated consistently since 1935.

Officials of the company stated that they had been contemplating closing the mill for some time, and issued the following statement:

"The No. 2 tailing mill of the Cardin Mining and Milling Corporation has been permanently closed and is now being dismantled. The rising cost of labor and supplies have made the operation economically unsound. A recent storm caused sufficient damage to the tailing elevator that the company could not afford to repair that and pay other costs. The closing down of this mill will result in the lay-off of approximately 30 men."

Be *sure* with Pure Lubrication

Investigate the advantages of Pure Oil lubricants and service for the protection of vital mining machinery. Our lubrication engineers will be glad to discuss your problems —without obligation.

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5' x 10' Denver Steel-Head Rod Mill . . . one of 21 Denver Ball and Rod Mills furnished one customer

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RICHMOND, AUSTRALIA: 530 Victoria Street

Coal Dock Equipment Being Rebuilt

It is anticipated that the mantrolley of the Carnegie Coal & Dock Company, which was burned early this year at its coal dock at Superior, Wis., will be rebuilt in time for the arrival of the first cargoes at the opening of navigation. The Escanaba Coal & Dock Co. at Escanaba, Mich., has completely rebuilt and modernized its coal bridge. This structure was wrecked in a wind storm during September, 1946. The coal bridge was re-erected by the McDowell Company of Cleveland, Ohio.

Wheels of Government

(*Continued from page* 94)

mately two years. Copper sulphate was excluded from the suspension. As originally introduced by a group of fabricators, the bill called for a three-year suspension to March 31, 1950, but this was reduced to two years on the floor of the House. Efforts on the part of Finance Committee Chairman Millikin (Rep., Colo.), and Senator Ed Johnson (Dem., Colo.) to hold the suspension at one year were unavailing, but a further battle is expected on the floor of the Senate.

Potash Regulation

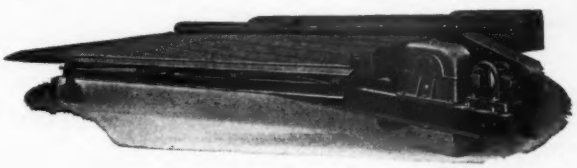
Potash producers and others interested in mineral leasing on the public domain are deeply concerned over amendments issued by the Department of the Interior April 1 to regulations governing the issuance of prospecting permits and leases for the mining of potash.

While the new regulations have increased the area for exploration permits to 25,600 acres, they provide that the Government shall have a preemptive right to purchase a portion of the potash produced under lease, amounting to 10 per cent of the output. The price is to be determined by the Secretary of the Interior. Even though the portion of production thus subject to acquisition has been reduced from 25 per cent (in the original regulations) to 10 per cent, there remains the disruptive effect of such a requirement on producer-customer relations and markets. The original Potash Act of September 7, 1927, contains no statutory authority for any such requirement and the entering wedge thus afforded for Government operations in the fertilizer industry is alarming.

Stream Pollution

A Senate Public Works Subcommittee has set hearings for April 22 on the Barkley-Taft Water Pollution bill, S. 418. Personnel of the subcommittee: Senators Malone (Nev.), chairman; Cooper (Ky.); Martin (Pa.), Republicans; and Overton (La.), and McClellan (Ark.), Democrats.

Under the bill the Surgeon General is directed to prepare programs for eliminating or reducing pollution and to notify appropriate state or interstate health authorities, where it is found that pollution of interstate waters is jeopardizing health or welfare of citizens, and to recommend remedial measures. If action to abate is not taken within a specified time, the Surgeon General may recommend that suit be instituted by state health authorities or interstate agencies. If such suit is not initiated within reasonable time, not to exceed two years, action to abate shall be requested by the Surgeon General and brought in the name of the United States by any Federal attorney. The bill does not contain the drastic prohibition against new sources of pollution which is a part of the Mundt (Rep., S. Dak.) bill in the House.



One Man Operates a Large Battery of *Super Duty* Coal Tables

So simple and so complete are the washing operations with a SuperDuty Diagonal Deck Coal Table, that it takes but one man to handle dozens of tables—as many as he can see.

Such labor economy is significant, but more important is the unparalleled efficiency of the SuperDuty Table itself. The diagonal deck design places 75% more riffles in the natural path of the separative action, thus multiplying the efficiency of the operation.

VISIT BOOTH 809—COAL SHOW

This action and many other SuperDuty features will be demonstrated in Booth 809 at the Coal Exposition in Cleveland, May 12-15. You are invited to come in and see for yourself why so many coal operators are demanding more and more of these diagonal deck tables that reduce costs while producing higher grade products.

CONCENCO FEED DISTRIBUTOR

The Concenco Revolving Feed Distributor is a heavily fabricated all steel machine, built in various types, with motor drive requiring less than ¾ H.P. in operation. This distributor effects perfectly a splitting of feed sluiced to its revolving tank, into any desired number of equal portions. It is especially suitable for efficiently feeding a battery of coal washing tables, giving an equal distribution of feed to each table. *See it at the Coal Show.*

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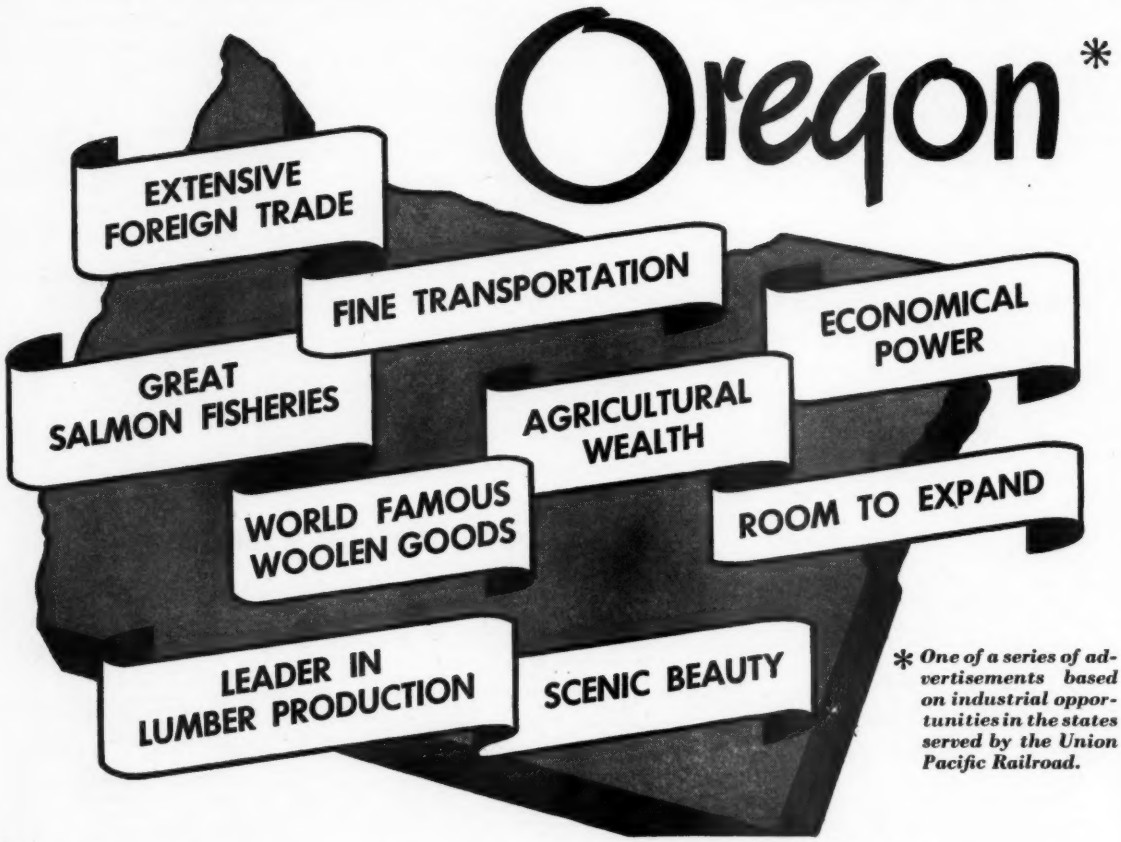

* *One of a series of advertisements based on industrial opportunities in the states served by the Union Pacific Railroad.*

When the Beaver State presents its business card, it could justifiably read, "Enterprise, Unlimited." Industry re-discovered Oregon during the war. It found boundless opportunities capable of providing a livelihood for 10 times the state's present population.

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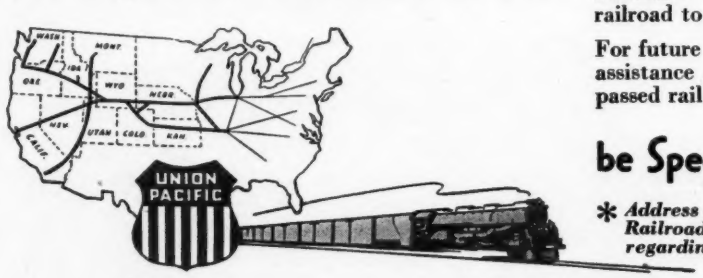

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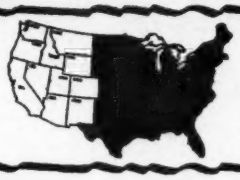

Geophysics to be Applied at UVX

An extensive geophysical survey is to be made at the property of the old United Verde Extension Mining Company at Jerome, Ariz., in an effort to find additional ore bodies of copper, gold, and silver. The work will be done by Verde Exploration Company, headed by Arthur Notman of New York.

Verde Exploration Company was organized recently under Delaware laws and on February 20 purchased the remaining assets of the United Verde Extension for $105,000. Familiarly known throughout the copper world as UVX, these claims produced more than $132,000,000 in copper before the known ore body was exhausted and the property taken over 10 years ago by the Clemenceau Mining Corporation, a liquidating company. Several liquidating dividends have been paid to the stockholders and now, with the sale of the remaining assets, a final distribution will be made in a few months.

Other officers of the new corporation which plans for further exploration of the holdings are: Vice president, Phillip Kraft, 1120 Park Avenue, New York, N. Y., and secretary-treasurer, Francis R. Holmes, 318 Warwick Avenue, Douglaston, N. Y.

Pilot Plant Completed

The Perlite Division of Dant & Russell, Inc., has completed installation of a pilot crushing unit at its Lady Frances Mine on the Deschutes River, south of Maupin in Wasco County, Oreg. The plant will prepare closely-sized perlite for the company's furnace plant located at St. Helens, where the product will be expanded for use in lightweight accoustical and insulation wall board.

Ore Shipments to be Increased

Ore shipments from the Brooklyn mine of the Saranac Mining Co. near Maxville, Mont., will be stepped up to between 150 and 200 tons daily under the terms of a milling contract tentatively agreed upon between the management and the operators of the Federal-built 500-ton concentrating plant at Butte. The arrangement is expected to prove of major importance to the company because all metals are to be paid for. These include zinc and copper, in addition to the silver-lead content of the ore. Mill tests have shown an economical recovery of 95 per cent of the values, the metals separating readily and without fine grinding.

California Placer to Have New Dredge

Installation of a gold dredger at the Nash placer property by the Meyer Co. and associates of Los Angeles is expected to be completed soon. Located on Coffee Creek near Trinity Center, the Nash is an old producer and is credited with containing an extensive deposit of auriferous gravel.

Equipment is being provided to level off tailing as dredging proceeds so that the acreage can be used later for agriculture. The Nash is in an area where placer and lode mining has been carried on more than 80 years and near a number of formerly important gold producers.

Mining Company Dissolved

The Pacific Consolidated Mining Co. is being dissolved, according to announcement by its president, C. D. Brown, Salt Lake City, Utah. It is understood that Pacific stock will be exchanged for stock in the American Fork Consolidated Mines, Inc., which is operating the Pacific silver-lead-copper mine near American Fork.

Gypsum Company Active

Sulphur Springs Gypsum Co. will increase production from its present 50 tons a day, to 200 tons daily by March 1 and to 500 tons a day by July 1, H. J. Adams, president, announced at Thermopolis, Wyo., recently. A contract with the Wyoming Mineral Products Co. of Spokane, Wash., has been signed calling for purchase of the entire output.

York Mining Company to Expand

According to G. C. York, head of the York Mining Company, of Albuquerque, N. Mex., the company is planning the construction of a new concentrating plant to be located near Albuquerque. The company holds some 30 mining claims in Socorro and Bernalillo counties.

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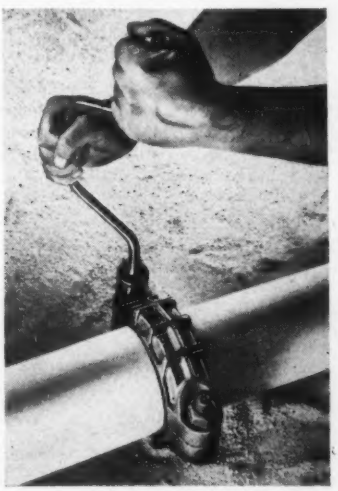

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Diamond Drilling Program Started

It is reported that Zenda Gold Mining Co., owner of a large acreage of mineralized ground in the old Calico silver camp in San Bernardino County, Calif., has begun diamond drilling preliminary to extensive development of the property. Resumption of activities is due in some measure to the recent increase in the price of silver. W. F. Staunton is president.

Mill Reopened

The Clear Creek Gilpin mill, reopened not long ago after having been closed down since 1942, is milling lead-silver ore from the Elsinore mine near Blackhawk. The Globe Mining Co. is operating the property which is located a half mile north of Blackhawk on Clear Creek.

Repairs Complete

Replacement of surface equipment, partly destroyed by a recent fire at the collar of the Silver Pick Shaft at Goldfield, Nev., was said to have been completed by the Newmont Mining Corporation, which has acquired numbers of claims in the district and has reopened in the 1,300-ft. Silver Pick Shaft.

Mica Research

A grant of $29,000 from the United States Army Signal Corps to the Colorado School of Mines for "a study of the process of making synthetic mica or some inorganic substitute" was disclosed recently by Dr. Ben H. Parker, president of the school. At the same time the appointment of Dr. Leon S. Ward, head of the department of chemistry, as director of the research program was announced. Dr. M. F. Coolbaugh, president of the school for more than 20 years until his retirement in January, 1946, and now president emeritus, will be associated with Dr. Ward in the research.

During World War II, sheet mica suitable for use in high-grade condensers in electric equipment was a number one strategic mineral in the United States, Dr. Ward pointed out in discussing the essential nature of the research program. Because of its insulating properties, its thinness and flexibility, substitutes for use in this equipment were not possible. Although the United States has tremendous supplies of flake mica useful for such purposes as insulating material in buildings, the supply of sheet mica in the United States is insignificant. Most of the supply necessary during the war was obtained from India.

Activity in Washington Lead-Zinc Area

The Sullivan Mining Company, jointly owned by Bunker Hill and Hecla Mining companies, which is operating the big Star zinc mine at Burke and the Sullivan electrolytic zinc plant at Kellogg, has taken a lease and option on approximately 6,000 acres of mining ground in the Metaline Falls district of Washington, just south of the Canadian line. The district has been extensively diamond drilled by the United States Bureau of Mines and several companies are already operating successfully in the district, including the American Zinc Company, the Pend Oreille Mines & Metals Company, the Grandview Mining Company and the Metaline Mines & Leasing Company. Hecla Mining Company will independently retain control of the Red Bird mining property in the same district on the Canadian side of the line, which it purchased some three years ago.

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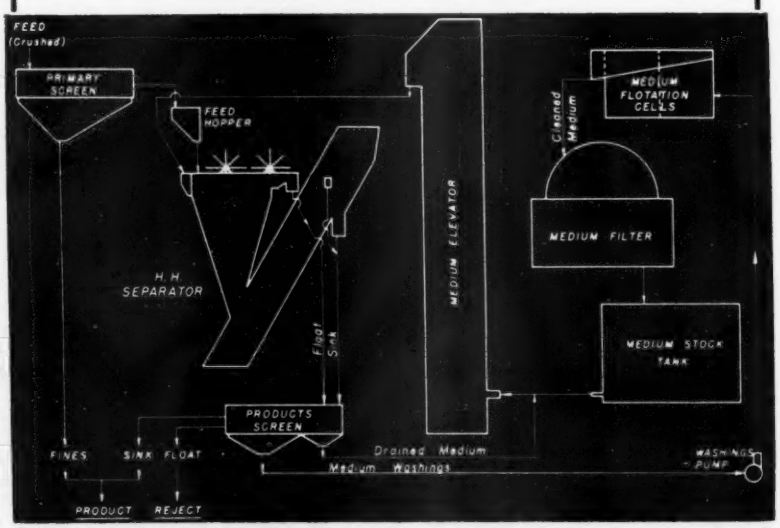

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San Juan Mine to be Reopened

Operations, Inc., a new organization, has leased the San Juan mine, situated in the Dragoon Mountains, from Jonathan Gordon of Tombstone, Ariz., and is making plans for the immediate development of the property. Plans also include the construction of a 100-ton flotation plant at Tombstone.

The principals in Operations, Inc., are George I. Barnett, mining engineer of Berkeley, Calif.; Guy and Gerald Mann of Dallas, Tex.; and Francis Fredrick, consulting geologist of Berkeley, Calif.

A new road is to be constructed from Middle March Pass to the mine, a distance of about 2½ miles, and contract for the work has been awarded to Paul Chadwick of Tombstone. San Francisco engineers will be in charge of mill construction.

Plant Capacity to be Increased

The Bunker Hill & Sullivan Mine at Kellogg, Idaho, is averaging an output of 1,000 tons per day, the largest tonnage the mine has been able to produce since before the war on account of labor scarcity. The company now has 1,450 men on the payroll, 900 in the mine and mill, 500 at the lead smelter and 350 at the Sullivan electrolytic zinc plant. The lead smelter is now turning out 3,500 tons of refined lead per month, a 70 per cent increase over its war-time production. Its full capacity is 5,000 tons per month. The company has a milling plant of 1,800 tons daily capacity and now has plans under way which will increase this capacity to 3,000 tons per day.

Mining Properties Purchased

The Nancy Lee Mining Company, owning property in the Keystone district of Montana, which is under lease to E. G. Smith, of Wallace, announces the purchase of the Bobby Anderson and Amy Matchless properties in the Pine Creek section of the Coeur d'Alenes.

New Orebody Opened

The Dayrock Mining Company, operating in Nine Mile Canyon just north of Wallace, Idaho, has developed on the 650-ft. level the third new major sized lead orebody that has been found in the Coeur d'Alene district since 1942. The Dayrock Company now has this orebody opened and prepared for stoping operations for a distance of 600 ft., showing a width from 4 to 15 ft. high grade ore with ordinary samples running around 35 oz. in silver and 55 per cent lead. The entire length of this ore shoot is unknown, but the company has made preparations to continue drifting on the vein both east and west on the 3,500 level. The east drift at present shows a vein width of 12 to 13 ft. of ore streaked with heavy bands of high grade galena. The company also has this orebody opened with a crosscut on the 800 level, where it shows a width and values comparable with the 650 level so far as it has been prospected.

The other two new major-sized orebodies found in the district since 1942 are at the Bunker Hill & Sullivan, at Kellogg, and the Sunshine mine, halfway between Kellogg and Wallace.

Fluorspar Property Being Developed

Joseph A. Anderson and California associates are developing their White Chief and Snow Ball fluorspar properties in the Harquahala mountains in Arizona near the old ghost town and mining camp of Alaska, where

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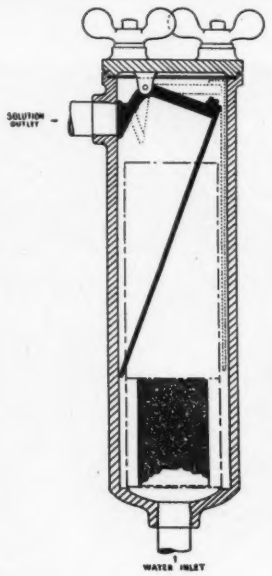

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rich lead, silver and gold ores were milled many years ago.

During the past year they have discovered and blocked out extensive bodies of high grade ore. Their methods of exploration were by bulldozing, shafting and core drilling. Valuable government cooperation was obtained in these operations, being one of the first experiments in blocking out fluorspar with the core drill. The core drilling operation was successful even though the cores of fluorspar have a tendency to fracture excessively.

The material produced in these two properties is suitable for metallurgical, acid grad and ceramic spar, it is said. It is estimated that the new plant will cost approximately $160,000 and will have a capacity of 150 tons daily.

Tungsten Operation Progressing

Curtailed operations at the mine and mill of the Nevada Scheelite Mining Co., southeast of Rawhide, Nev., are temporary and plans are going ahead for future production of concentrate on a larger scale than before. Development work at the mine was suspended in mid-December and only a small crew was left at the mill where heavy machinery is being moved in and installed on prepared foundations.

A new mill is under construction at the mine site. After a fire last year, which had destroyed the old mill and most of the buildings eight miles south of the mine, it was decided to rebuild at the mine in order to eliminate the ore haul.

The shaft is now down near the 400-ft. level. The scheelite is of good quality, running 1 per cent and better.

Vanadium Mill to Reopen

The Vanadium Corporation of America will reopen its large mill at Naturita, Colo., in the early part of May. Workmen are now preparing the mill for operation. The present plans are for the Vanadium Corporation to run the mill only, leasing its mining claims to individuals on a contract basis. The contractors will haul most of the ore from the mine to the mill site. D. W. Viles, assistant general manager of the Vanadium Corporation, stated that local labor for operating the mill is plentiful, as well as housing facilities. A government housing project was built near Naturita during the war. The company has its own housing project for office personnel and management, known as Vancorum, consisting of about 25 modern homes.

Coal will be purchased from three local mines in the region, rather than

attempting to open and operate one of the company's own coal mines. The Naturita plant has been closed for the last 18 months, although office personnel and laboratory technicians have been retained on special work.

Nevada Gold Property to Resume Production

Treatment of ores at the Getchell Mine, Inc., is expected to be resumed in the near future. Some changes have been made in the new mill after a quantity of tungsten ores for war purposes had been cleaned up. The Getchell will resume operations with a new milling process, increasing the daily tonage from 900 to 1,500. Development work was carried on at Getchell during the war, particularly on a new three-compartment shaft, which is to be sunk to 700 ft. Cross cutting has been started to strike the Getchell vein.

Idaho Mining Association Meeting

The Idaho Mining Association is planning to meet at Sun Valley on May 23 and 24. National legislation before Congress as it affects mining will be reviewed at this time and suggestions made to the Congress that will stimulate an incentive to look for new mines. Other subjects to be discussed are labor, public relations, tariff, copper, lead, zinc, gold, silver, and the survival of free enterprise. A paper on the latest developments in the phosphate industry in Idaho will be presented. The Friday noon luncheon with a short program will be sponsored by the American Institute of Mining and Metallurgical Engineers. The Prospectors and Small Mine Operators luncheon will be on Saturday.

New Mining Firm to Operate

Organization of a new mining firm, known as Mineral Fork Mining Company, for the purpose of developing properties located in Mineral Fork of Big Cottonwood Canyon, Utah, was announced in Salt Lake recently.

The firm has obtained a 16-year lease from Mountain Mines Company on the entire upper portions of Mineral Fork Basin. The lease covers 6,000 ft. along the Silver King vein. George A. Rich is president of the new Utah corporation with Earl B. Anderson vice president and Karl J. McKain secretary.

The lease comprises property known as the "upper workings" of Mountain Mines' holdings and includes ground extending 325 ft. below the old Regulator Johnson main tunnel.

In addition to production operations from known ore showings in these upper workings, present plans of the group call for the driving of a development tunnel from a point on the east side of Mineral Fork Canyon 325 ft. below the Regulator Johnson tunnel in an endeavor to undercut orebodies formerly opened above.

The Mineral Fork Company is providing its own road equipment for the purpose of improving the road into the operating area and, according to reports, intends to fully equip its property with modern mining machinery.

Old Gold Lode Under Investigation

Solar Development Company, subsidiary of the Consolidated Mining & Smelting Company of Canada, is investigating the North Pole-Columbia lode near Bourne, in Baker County, Oreg., under a lease from Ellis Mining Company. The North Pole-Columbia lode is one of the famous old gold producers of eastern Oregon. Originally there were three mines producing from this extensive lode. Operations date back to 1895.

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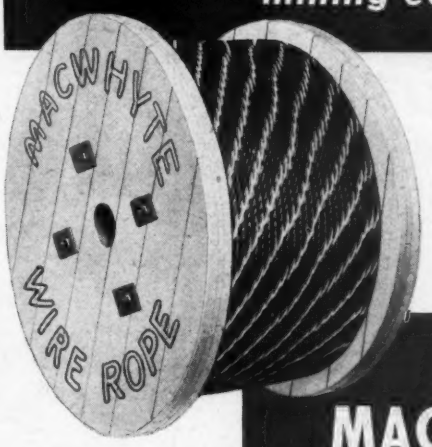

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Denn Mine Sold

Stockholders of the Shattuck-Denn Mining Corporation, on March 8, approved the sale of the company's Denn mine to the Phelps Dodge Corporation. The Denn, a copper property, adjoins claims of Phelps Dodge Corporation's Copper Queen Branch, near Lowell, Arizona. Terms of the sale call for the payment of $300,000 in cash and further payments based on any ore which may be mined by Phelps Dodge from the Denn ground in excess of the first 100,000 tons.

Excluded from the sale were the Shattuck group of claims and Shattuck-Denn's concentrating mill at Bisbee. This plant has been treating lead-zinc-copper ores from mines the company owns or controls, as well as ores from other mines on a custom or toll basis. It was the first mill to treat the lead-zinc sulphide ores of the Bisbee district and was a major factor in making that district an important source of lead and zinc.

Shattuck Denn also retains its Iron King mine at Mayer, Arizona, its principal mining operatio since 1942. The Iron King is primarily a producer of lead and zinc, but gold and silver, plus small quantities of copper, are important byproducts. Metal values are recovered in the Iron King mill which is being enlarged and will have a daily capacity of 400 tons of ore.

Plant to Process Diatomaceous Earth

The Eagle-Picher Company is completing a large plant at Clark station, 18 miles East of Reno, Nevada, designed to process diatomaceous earth. The construction is being done through the insulation division of the corporation. A massive deposit of diatomite is available for power shovel mining. The plant will have a minimum capacity of 700 cubic yards a day. Between 30 and 40 men have been employed during construction. When the operation begins, the number will be increased to approximately 120 men.

Old Mount Stages Comeback

The Mt. Gaines mine at Hornitos, California, was virtually abandoned in 1911 as a worked-out property. Under the management of J. P. Hart, Nevada mining engineer, in 1946 the Mt. Gaines Mining Company was operating at capacity and was the largest gold producer on the Mother Lode. New orebodies were developed during the year and substantial reserves have been blocked out.

Gypsum Mine Resumes Production

With the opening of the Brutch property, four miles northwest of Thermopolis, Wyoming, production has been resumed by the Sulphur Springs Gypsum Company. The first carload of gypsum was recently shipped and several truck loads of the fertilizer product have been sent to Wyoming points. Production is being handled by Anderson Brothers, who plan to install automatic bagging machines to increase production capacity to about three cars a day.

Underground Development Progressing

At the Afterthought Mine located at Ingot, 30 miles northeast of Redding, California, the Coronado Copper and Zinc Company, a Harvey Mudd subsidiary, is continuing underground developments. This mine had not been worked for 20 years when the Coronado interests leased it in 1925. Camp buildings have been reconditioned, equipment moved to the ground, and old workings rehabilitated. Lyttleton Price, company engineer, is in charge of the operation.

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The Simplex No. 86A (5-tons), is 20" in height and has a 13" lift. It is the ideal jack for moving and adjusting cutting machines, conveyors and loaders, etc., wherever headroom permits the use of a jack of this size.

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The Simplex No. 85A (5-tons), is 17" in height and has a 10" lift. It provides all the efficiency and safety features of the Simplex No. 86A for locations where more limited height and lift are required.

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The Simplex No. 84A (5-tons), is 14" in height, has a 7" lift and weighs only 28 lbs. It is designed and constructed for easy handling and use in cramped quarters. This efficiency has been achieved without sacrifice of any of the safety features that have made Simplex Jacks outstandingly popular wherever coal is mined.

No. 185 (5-tons) Height 17" lift 10". Adjustable auxiliary shoe provides side lifting.

No. 1017 (10-tons) Height 17", lift 9½". For working medium seams. Answers the demand for a light weight, heavy capacity jack for modern heavy mining equipment.

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This concentrated, solidified cartridge has the identical dust control characteristics of liquid Compound M, which has been widely used in American and foreign mines, power plants, industrial plants and similar places. Each cartridge, 3" in diameter by 8" long, will make 1,000 gallons of "wet" water. The cartridges are packed 12 to a shipping carton.

The automatic proportioner, which was developed specifically for the application of the solidified Compound M, is a sturdy casting, 4½" in diameter and 19" high. This is connected directly into the water line and the water pressure itself furnishes the power for both proportioning and spraying. The unit is fully automatic, is designed for over 100 lbs. pressure and requires no adjustment or servicing, other than replacing the cartridge as required.

Aluminum-Body Timbering Jack

The new corrosion-resistant aluminum body offered by The Duff-Norton Manufacturing Company as optional equipment for use with its mine roof jacks has, according to the company, been successfully tested in actual mining service.

Substitution of aluminum tubing for 2-in. black pipe in standard Duff-Norton 8- and 16-ton mine roof jacks provides a weight reduction of more than 2½ lbs. per jack foot—an over-all weight saving of almost 40 percent on a 6-foot jack.

The new aluminum body is especially advantageous in mine timbering work where jacks must be handled and reset frequently.

Safe, positive-acting Duff-Norton mine roof jack bases and top fittings are furnished with the new aluminum body in any desired jack height. For further details, write direct to The Duff-Norton Manufacturing Company, P. O. Box 1889, Pittsburgh 30, Pa.

With trolley pole up, locomotive hauls a trip of empty cars from main siding to working area

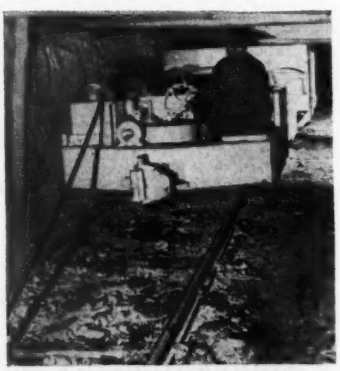
New Gathering and Swing Locomotive Goes into Service at a West Virginia Mine

Another advance in the progress of mechanized mining is a dual-duty Westinghouse locomotive designed to work at the face where slow speeds are required and then haul loaded cars to the main siding with dispatch. Such an explosion-tested locomotive, which efficiently handles gathering and swing operations, has recently gone into service in a large mine in West Virginia.

Nominally rated 8 tons, this dual-duty locomotive has two speed ranges: from a creep speed to rated 5 m.p.h. when operating on the reel for gathering, and from a creep speed to rated 7½ m.p.h. when operating on the trolley for hauling to a main siding. This two-speed feature is obtained by operating the motors on full field only when on the reel and on full field, or shunted field at higher speeds, when on the trolley pole. Operation is simplified by a parallel reversing single-handle controller.

Service brakes are hydraulically operated and an accumulator makes possible three or four full brake applications after power is shut off. Parking brakes are screw operated and can be used as service brakes.

Should an emergency arise, such as a power failure, that would necessitate reversing the motor controller to help bring the locomotive to a stop, a current limiting feature protects the motor from excessive currents.



Operating on the reel, locomotive is inching two empties up to the loader

Armature and field coils are insulated with a varnish designed for the high temperatures. The wiring leads into the resistor box are Silicone treated to withstand the extremely high temperatures involved as well as to protect the insulation from moisture.

Painted a canary yellow as a safety feature, the locomotives can be seen a long way off, even in the dim light of mine haulage ways.

Controlling Interest in Electric Railway Equipment Acquired by McKee

G. K. McKee has acquired controlling interest in the Electric Railway Equipment Company, 2900-2918 Cormany Avenue, Cincinnati, Ohio, it was announced recently. Organized in 1892 and incorporated in 1920, the concern manufactures electric equipment for coal mines and traction companies, street lighting equipment including trolley span and transmission poles. A large plant also is operated at Bridgeport, Ohio.

G. K. McKEE

At the same time, McKee retired as vice president and general manager but remains on the board of directors of the Avey Drilling Machine Company, Covington, Ky., after having been associated with that company for 20 years.

In addition to McKee, new officers of the Electric Railway Equipment Company are A. L. Johnston, vice president-secretary, and James E. Eshelby, assistant secretary-assistant treasurer. McKee is treasurer.

Cooperative Ingersoll-Rand-Carboloy Jackbit

A development in rock-drilling bits which, according to all tests so far, promises to make economical the operation even of some mines too costly to work with present drilling equipment has been announced by Carboloy Company, Inc., Detroit, producer of ultra-hard carbide metals.

Developed cooperatively with Ingersoll-Rand Company, the development consists of a technique of permanently mounting ultra-hard Carboloy cemented carbide inserts in 4-point jackbits. To go along with this, Ingersoll-Rand has developed a new, special, harder and longer wearing alloy steel drill rod with a special high-toughness stud connector to mount the bits on the drill rod. The combination of these developments makes possible securing of maximum benefits from the use of Carboloy cemented carbide, resulting in even longer life for both jackbits and drill rod.

With satisfactory completion of field and laboratory tests, the new bits—which have demonstrated their ability to drill blast holes in even the hardest of rock formation with remarkable ease and speed—are now being readied for mass production by Ingersoll-Rand.

In general, the new bits will produce between 50 and 200 times (depending on type of formation being drilled) the depth of hole obtainable with steel bits without reconditioning. Tests in drilling of Indiana limestone showed an almost indefinite life for the new bits. After drilling some 650 ft., the test was discontinued since there was no appreciable dullness or reduction of drilling speed. The loss in gauge at this point was only .006 in.

Since smaller size bits can be used for a given hole diameter, lighter drilling equipment may be used. In one case, this figured out, for instance, to a 3-in. machine as against a 3½-in. machine for the same job. This, incidentally, offers a proportionate saving in air consumption per machine.

Cleaning Plant Contracts

The following contracts have recently been awarded the Roberts and Schaefer Co., of Chicago, Ill.:

U. S. Bureau of Mines, Missouri Ordnance Works near Louisiana, Mo. Coal preparation end of the new Hydrogenation Demonstration Plant. The Bechtel Corporation of Torrence, Calif., general contractors, Roberts and Schaefer sub-contractors. The contract consists of raw coal unloading facilities, crushing, pulverizing, heat drying and the delivery of coal to the pasting plant; capacity 75 tons per hour; completion, January, 1948.

Glogora Coal Co., Huntington, W. Va.—Coal preparation plant at the Blue Pennant, W. Va., mine; capacity, 400 tons r.o.m. per hour. The lump coal will be hand picked. The 6 x 1¼" will be wet washed in hydro-separators, and the 1¼" x 0 will be air cleaned in Stump air-flow coal cleaning units; to be completed December, 1947.

Wyoming Mining Corp., Philadelphia, Pa.—Coal tipple comprising head house with revolving dump and car feeders, rope and button conveyor, Marcus picking table screens and loading booms, together with hydro-separator wet washing equipment for cleaning 6" x ¼" coal; capacity, 250 tons per hour r.o.m.; to be completed March, 1948.

Island Creek Coal Co., Holden, W. Va.—Plant at No. 24 mine, Delbarton, W. Va., for wet washing at rate of 75 tons per hour ¼" x 0 coal in hydrotator, classifier equipment; Bird filters and Raymond flash dryers to be used for drying coal for market; to be completed January, 1948.

Barnes & Tucker Co., Barnesboro, Pa.—Remodeling of present tipple and cleaning plant at mine No. 15, Bakerton, Pa.; capacity, 400 tons per hour of r.o.m. coal crushed to 3", 185 tons per hour of 3" x ⅜" to be washed in hydro-separators, 215 tons ⅜" x 0 to be cleaned in Stump air-flow coal cleaning units; to be completed February 1, 1948.

Tucker Coal Co., Cedar City, Utah—Unit hydrotator complete with screens, tanks, refuse disposal, etc.; capacity, 20 tons per hour to clean 1¼" x 0; to be completed June 1, 1947.

Sparta Coal Co., Colterville, Ill.—Unit hydrotator complete with screens, tanks, refuse disposal, etc.; capacity, 35 tons per hour to clean ¾" x 0; to be completed June 1, 1947.

Powhatan Mining Co., Cleveland, Ohio—Coal preparation plant at the Powhatan mine, Powhatan Point, Belmont County, Ohio; capacity, 100 tons per hour to clean ¼" x 0 coal in Stump air-flow coal cleaning units; to be completed April, 1948.

Not one of the above Western "Big Inch" blasting caps was detonated after a 75-ton section of rock ceiling in a mine had fallen on them

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HUNTINGTON, W. VA.

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Performance

A TIMKEN BEARING ADVERTISEMENT BY Page

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Philadelphia, July 26, 1940

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W. VA.

The Timken Roller Bearing Company,
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Dear Sirs:-

I have read with considerable interest your advertisement on the back of July Mechanization in regard to your roller bearings on the Page Coal & Coke Company's mine cars.

I thought it might be of additional interest to you to know that many of these cars are equipped with bearings taken from old cars, many of which are the originals which have been in use for over twenty years. We are now ordering another 100 cars, the bearings of which will all be taken from old cars, anywhere from 10 to 20 years old.

Sometime ago when I was at the mines this question came up, and according to their records we have never had a broken bearing, except in a wreck, since we have been using your roller bearings. This we consider quite a record.

Yours very truly,

E. Rodman Page
President

ERP-K.

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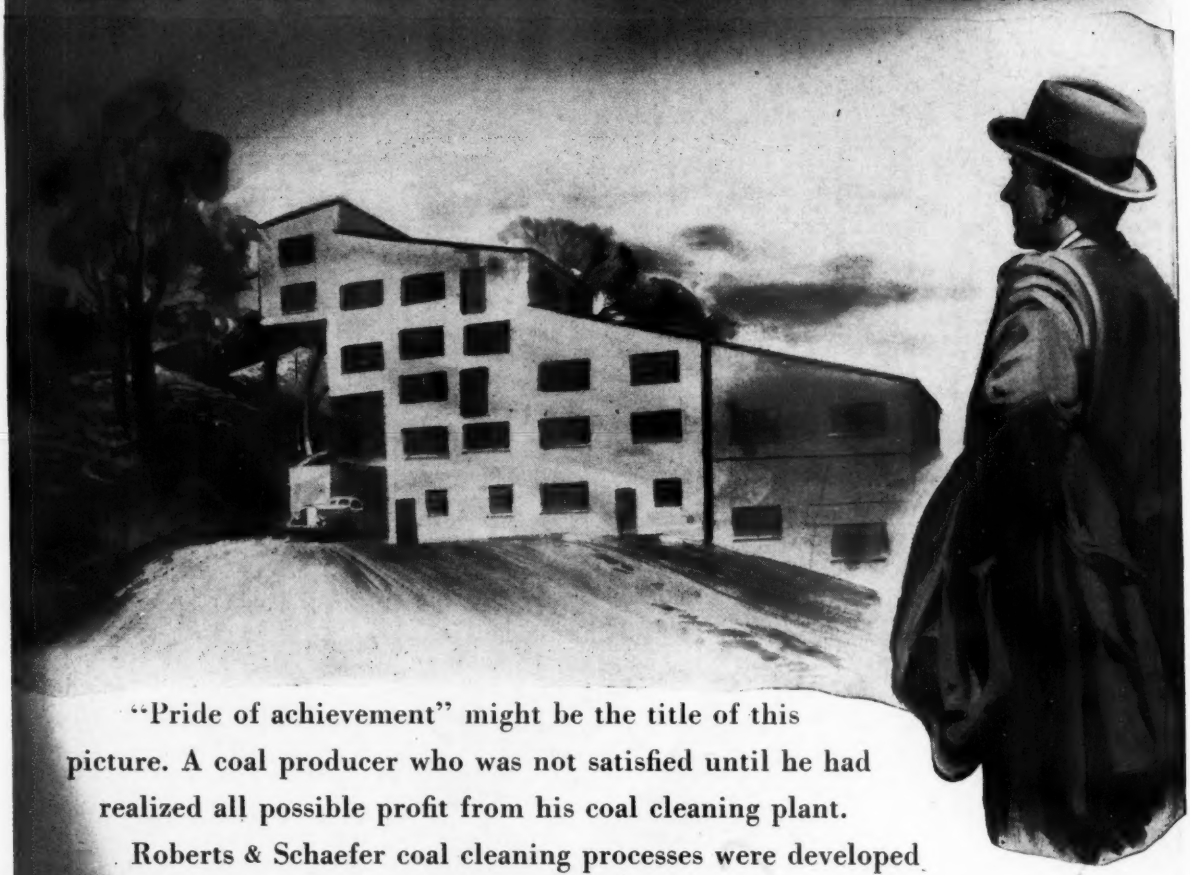

"Pride of achievement" might be the title of this picture. A coal producer who was not satisfied until he had realized all possible profit from his coal cleaning plant.

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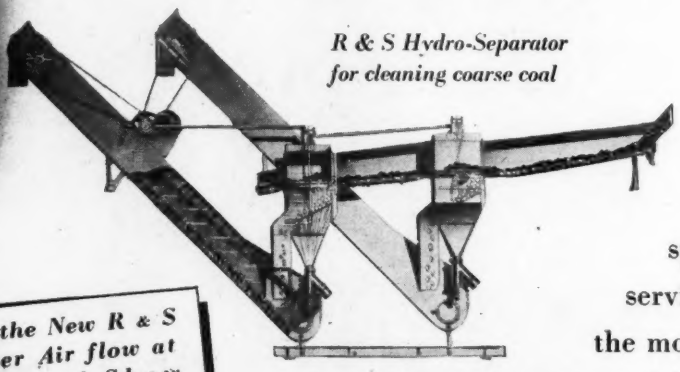

R & S Hydro-Separator for cleaning coarse coal

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